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A New View of Obesity: Food Addiction

By Cynthia Hodgins, DNP, APRN, FNP-C

Obesity has reached epidemic proportions in the United States: 35.7% of adults are obese and 71.1% are overweight or obese.[1] The cost of treating illnesses resulting from obesity has escalated into the billions,[2] and illnesses associated with obesity are the leading cause of an estimated 200,000 preventable deaths annually.[3]

Overweight and obese Americans have a strong motivation to lose weight, as evidenced by sales of weight loss programs and products ($2.73 billion in 2010).[4-6] This suggests that the problem of obesity is not driven by a lack of motivation or effort.[7,8]

Behavior & Neurology

Considerable evidence has demonstrated neurochemical and behavioral correlations between drug addiction or drug dependence and excessive food consumption or compulsive overeating. These behaviors are linked to neurochemical changes in the brain similar to those that occur with addictive drugs.

Many people claim they feel compelled to eat certain foods, similar in some ways to how a drug addict feels compelled to use or a smoker feels compelled to smoke.[9-20] Avena et al, Wang et al and Volkow et al performed brain imaging studies at the American Institute of Drug Addiction. Each research team found decreased striatal DA D2 receptor availability in obese patients. This was associated with decreased metabolism of DA in prefrontal regions, which has been linked to compulsive food intake similar to compulsive drug use in patients with drug addiction.[9,15,16]

Food Addiction

One definition of addiction is "a preoccupation, obsession and/or pursuit of the substance that persists despite the accumulation of adverse consequences." Another is the "inability to consistently abstain from consuming a substance."[18,19] The behavioral and neurochemical changes in compulsive overeating are now categorized in the Diagnostic & Statistical Manual (DSM) as a binge eating disorder without purging or a food addiction, that correlate with drug dependence.[20]

A diagnosis of substance dependence requires the presence of three of the following seven criteria:

1. Substance taken in larger amount and for longer period than intended
2. Persistent desire or repeated unsuccessful attempt to quit

3. Much time or activity to obtain, use and recover
4. Important social, occupational or recreational activities given up or reduced
5. Use continues despite knowledge of adverse consequences (e.g., failure to fulfill role obligation, use when physically hazardous)
6. Tolerance (marked increase in amount; marked decrease in effect)
7. Characteristic withdrawal symptoms; substance taken to relieve withdrawal.[20]

Gearhardt et al developed and validated the Yale Food Addiction Scale (YFAS) as a tool for the diagnosis of food addiction based on DSM-IV criteria for diagnosing substance dependence.

The YFAS is designed to identify patients who show signs of addiction toward certain types of foods (e.g., high fat and high sugar).[20]

A pilot study using the YFAS found that 56.8% of patients reported chips as the highest problem food, 51.7% reported pizza, and 50% reported white bread. Other significant problem foods were chocolate, soda, pasta and French fries.[21]

Correlations of BMI to the seven diagnostic criteria for substance dependence and clinically significant impairment showed that symptom count increased as BMI increased.[8,20,21]

Research shows that genetic differentiation on a D2 dopamine gene marker, just as in alcoholism and drug addiction, is implicated as the cause of food addiction. DA D2 receptor deficiency has varying degrees of severity, just as depression and anxiety. The less receptors a patient has, the greater amounts of certain foods he or she requires to achieve satisfaction or pleasure.

Implications for Practice

Findings provide strong evidence that food addiction may represent a distinct etiology of human obesity in the general population, caused by a DA receptor deficiency.

The implications for individual and national practice are important, particularly at the start of a new year when many patients talk to their healthcare providers about weight loss.

At the individual practice level, addressing the cause of obesity as a dopamine deficiency issue instead of personal choice or lack of motivation may be more effective than simply recommending that a patient follow the Dietary Guidelines for Americans. As with any addiction, the first steps are to identify and acknowledge the problem as well as to acknowledge that a problem exists.

At the national practice level, changes used to promote smoking cessation may be effective in addressing the obesity problem. These have included a decrease or elimination of television advertising of tobacco products, an elimination of cigarette vending machines, higher taxes on tobacco, and development of smoking cessation medications and smoking cessation programs. Similar interventions may be effective in addressing food addiction, such as: decreased advertising of calorie- or carbohydrate-dense snack foods; (may decrease "triggers" for snacking) a ban on advertising high-calorie, high-carbohydrate and high-fat foods as healthy; limiting snack food vending machines; producing food addiction medications that address the DA D2 receptor deficiency; promoting food addiction programs (Overeaters Anonymous has programs in place); and televised education campaigns that identify foods of addiction and inform consumers about how to end that addiction.

Cynthia Hodgins owns TLC Medical Weight Loss clinic in Austin, Texas (www.tlcweightlossclinic.com).

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