



THE EVIDENCE FOR ADDICTION TO PROCESSED FOODS A HANDOUT FOR HEALTH PROFESSIONALS

Goal: The goal of this Handout is to briefly acquaint health professionals with key evidence that chronic overeating may be a kind of substance use disorder (SUD) manifesting as addiction to processed foods.

Purpose: The purpose of the handout is to encourage health professionals to support patients and clients in efforts to abstain from processed foods in the same manner that drug addicts abstain from drugs of abuse. In addition, it is hoped that the handout will help health professionals refrain from encouraging processed-food-addicted clients to use addictive foods.

- It is also hoped that the handout will help health professionals reconsider recommending 'weight-loss' regimens to food addicts. Through mechanisms of hunger and even, malnutrition, weight-loss regimens can make food addiction worse and should be avoided by food addicts. Weight-loss has been observed in the course of treating food addiction by eliminating processed foods and establishing routines of well-balanced, fully portioned meals of unprocessed, high-fiber foods.
- This hand-out reviews key studies showing that the brains of obese people exhibit dysfunctional patterns that are similar to those of drug addicts. It summarizes how overeating behavior conforms to the DSM 5 SUD diagnostic criteria. The handout briefly reviews the evidence that particular processed foods have addictive characteristics.

Addictive Properties of Specific Processed Foods

Research into processed foods shows addictive properties for sugar and sweeteners, flour, gluten, dairy, processed fats, excessive salt, and caffeine. When combined, poly-substance characteristics can intensify the addictive properties of the food product.

- The addictive properties of sugar are perhaps the most studied.[1] Rats have been shown to choose sugar, high fructose corn syrup, and saccharine over cocaine and heroin. Rats have shown a sugar withdrawal syndrome similar to that of morphine [2]. Sugar activates the dopamine pathway [3].
- Gluten and flour made from gluten-grains contains a gluteomorphine that appears to activate the opiate pathways [4]. Salt has been observed to be used by morphine addicts in withdrawal, presumably as a replacement for morphine. [5] Processed fat appears to activate the opiate [6] and endocannabinoid [7] pathways in the brain. [8] Dairy contains a casomorphine which has been shown to bind to opiate receptors in the brain. [9] Caffeine has intoxication and withdrawal diagnoses in the DSM 5. [10] In the treatment of processed food addiction, these would all be classified as addictive or "trigger foods" which the food addict should abstain from.

The DSM 5 Addiction Diagnostic Criteria in Overeating

- Application of the DSM 5 SUD Diagnostic Criteria to overeating shows that overeating meets the criteria for an addiction. The criteria and their manifestation in overeating are described below.
- Processed food is often taken in larger amounts or over a longer period than was intended. This criteria is reported in studies as the tendency to regain lost weight, presumably in a pattern of unintended overeating. [11]
- There is a persistent desire or unsuccessful efforts to cut down or control processed food use. This behavior is seen in studies as an inability to lose weight. [12]
- A great deal of time is spent in activities necessary to obtain processed food, use processed food, or recover from its effects. Food addicts report spending time too tired to exercise or do anything but watch television. This behavior is found in the overweight research. [13]
- Craving, or a strong desire or urge to use processed food. Research shows a relationship between cravings responses and BMI. [14]
- Recurrent processed food use resulting in a failure to fulfill major role obligations at work, school, or home. Lower productivity among the obese is established in the research literature. [15]
- Continued processed food use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of processed food. Weight gain is documented in non-supportive marriages. [16]
- Important social, occupational, or recreational activities are given up or reduced because of processed food use. Isolation has been documented in the obese. [17] and human resource managers are seen to discriminate against the obese. [18]
- Recurrent processed food use in situations in which it is physically hazardous. Eating is the most common distraction while driving. [19]
- Processed food use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by processed food. Research shows non-compliance with diet in diabetics, for example. [20]
- Tolerance, as defined by either of the following: A need for markedly increased amounts of processed food to achieve intoxication or desired effect. The evidence for this phenomenon in overeaters comes from brain imaging research that shows the down-regulation of dopamine receptor fields characteristic of tolerance. [21] Or, A markedly diminished effect with continued use of the same amount of processed food.
- Withdrawal, as manifested by either of the following: The characteristic withdrawal syndrome for the processed food. A morphine-like withdrawal from sugar has been observed in rats [22] and caffeine withdrawal is described in the DSM 5 [10] Or, processed food is taken to relieve or avoid withdrawal symptoms.
- There are observations and studies of loss of control over processed foods that meet the DSM 5 criteria for the diagnosis of an addiction. Although processed foods are quite different from drugs and alcohol as they are perceived and used in our culture, nonetheless the eating patterns that result from their use are similar to addictive behavior.

Addictive Neuro-Dysfunction in Overeaters

- Scientists have noticed for several decades that the brains of overeaters show altered functioning similar to the brains of drug addicts. [23, 24] These observations are based on a growing body of research literature generated from brain imagining studies designed to understand addictions as well as overeating. This research is important because it supports the definition of overeating as an addiction.
- The addiction-like changes found in the brains of overeaters are as follows:
 - Hyper-active addictive pathways. These pathways are also known as the pleasure or craving pathways and include serotonin, dopamine, opiate, endorphin, and endocannabinoid. In overeaters, these pathways over-secrete craving neurotransmitters. [24] This 'flooding' of addictive neurotransmitters appears to produce intense cravings that are associated with loss of control.
 - Sensitivity to triggers. In overeaters, very slight stimulation can trigger the overproduction of craving neurotransmitters. Researchers have seen that just thinking about a processed food product can produce the flooding of neurotransmitters. [25]
 - Conditioned, learned, or Pavlovian responses. The craving response of overeaters, like those of addicts, can be subject to conditioning. [24] Just as Pavlov conditioned the saliva glands of dogs to activate at the ringing of a bell without the presence of food, addictive neuro-pathways can also be conditioned to activate even when processed foods are not present. This means that a place, person, thing, event or time associated with consumption of processed foods can trigger cravings without the presence of processed food.
 - Non-functioning cognitive centers. During a flooding of addictive craving neurotransmitters, the decision-making, memory and learning centers in the brain cease to function. [24] This may 'explain' many of the behaviors seen in the APA's addiction diagnostic criteria. At the moment of flooding, people are not able to remember consequences nor make good decisions.
 - Non-functioning inhibition center. The flooding has also been observed to coincide with 'shut-down' of the inhibition center. [26] This is interpreted as a loss of control, and may contribute to the unintended use described in the APA's addiction diagnostic criteria.
 - Down-regulated receptor fields. In order for the pleasure neurotransmitter to complete its circuit, it must 'hit' or 'dock on' a transmitter receptor. In addicts and overeaters, these receptor fields are down-regulated or 'shut-down.' [27] The theory is that as over-use and overexposure to stimulation bombard these receptors, they down-regulate. The person then increases consumption in an attempt to re-establish the level of pleasurable feeling they once had when the receptors were open. This may explain the phenomenon of tolerance.
 - Activation by stress. The addictive pathways are activated by stress in overeaters. [28]
- This body of research is important evidence for overeating as an addiction to processed foods. Food addicts can be helped by supporting abstinence from addictive foods. Health professionals should avoid encouraging food addicts to try to eat addictive foods in any quantity, even moderately.