



Stress and food intake

Last Updated : 02 February 2015

Some people eat less and others more than normal in response to stress. Innovative ways of tackling stress-related eating behaviour may help people control weight and reduce underlying stress.

Acute versus chronic stress

When we perceive an immediate threat (acute stress), the brain sends a signal to a number of systems including the hypothalamic-pituitary-adrenal (HPA) system, and activates stress hormones. This activation triggers a cascade of events to prepare the body for action. For example glucose is mobilised to fuel the muscles and brain, the senses are heightened, the heart works faster, and breathing quickens. This is commonly known as the “fight or flight” response, it evolved as a survival mechanism - enabling us to react quickly to life-threatening events.

In a healthy stress response, levels of stress hormones such as adrenalin and cortisol rise to meet the demands of the situation and then fall rapidly once it is dealt with. In chronic stress there is a prolonged exposure to stress hormones, particularly cortisol, and the body may not return to homeostasis (a healthy resting state). This can have serious health consequences and adversely affect the immune, cardiovascular and central nervous systems.

Stress and eating behaviour

In acute high-level stress, such as under a serious physical threat, the appetite is suppressed.¹ However, less intense but more long-term stress, like work pressure, can affect eating behaviour in different ways. It is estimated that around 30% eat less than normal when stressed, while most individuals eat more.² The HPA stress response system, which shares the same neural pathways as the control of food intake, is thought to be central to explaining both under- and over-eating.²

Individual responses

In response to stress, rats given standard chow eat less and lose weight. However rats eat more when exposed to palatable foods rather than standard chow, which suggests that pleasurable foods could help alleviate the symptoms of stress.

Humans are regularly exposed to pleasurable foods. Some people use food as a way to relieve stress and counter negative emotional states, whilst others do not. In people who strictly control their food intake (restrained eater or dieter), stress can override their conscious control, leading to overeating of 'restricted foods'.¹ There are also differences in people's ability to differentiate between hunger and other unpleasant internal states like stress.³ It is suggested that perhaps those who are more 'tuned in' to their appetite and metabolism are the ones who eat less in response to stress.³

Stress and body shape

Healthy men and women who exhibit increased cortisol reactivity in response to stress (in laboratory studies) have greater abdominal obesity, as do individuals with higher morning cortisol levels (a symptom of job and life stress), compared to controls.² Low socioeconomic status and job pressures, two indicators of chronic stress, have been associated with greater levels of abdominal obesity.⁴ It is suggested that chronically high cortisol levels in synergy with high levels of insulin (a hormone that helps the body use glucose) encourages fat deposition around the waist.² However not all studies find a link between stress and overall obesity levels.⁵

A mindful approach

Mindfulness programmes for stress reduction have been around for some time, and more recently have been applied to control disordered eating. They use techniques which interrupt habitual thought patterns, emotions and behaviours, and enhance awareness of thoughts, feelings, and sensory experiences.³ This approach helps people get in touch with their internal signals (recognising hunger and fullness, emotions and external cues), rather than relying on learned responses. A recent literature review of mindfulness programmes found that 86% of studies reported improvements in targeted eating behaviours.⁶ This approach may not only improve food choices and help control weight, but reduce underlying stress as well.

References

1. [Torres A & Nowson C \(2007\). Relationship between stress, eating behavior and obesity. Nutrition 23\(11-12\):887-894.](#)
2. [Adam TC & Epel ES \(2007\). Stress, eating and the reward system. Physiology and Behaviour 91:449-458.](#)
3. [Dallman MF \(2010\). Stress-induced obesity and the emotional nervous system. Trends in Endocrinology and Metabolism 21\(3\):159-165.](#)
4. [Brunner EJ, Chandola T & Marmot \(2007\). Prospective effect of job strain on general and central obesity in the Whitehall II study. American Journal of Epidemiology 165\(7\):828-837.](#)
5. [Block J, et al. \(2009\). Psychosocial stress and change in weight among US adults. American Journal of Epidemiology 170\(2\):181-192.](#)

6. [O'Reilly GA, et al. \(2014\). Mindfulness-based interventions for obesity-related eating behaviours: a literature review. Obesity Reviews 15:453-461.](#)

For more information

[Neurofast](#)