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## Cortisol, depression, and weight loss <sup>[1]</sup>

Dear Alice,

I recently went to my doctor because I've been unable to lose weight. I've been on a successful diet, accompanied with a reasonable exercise plan, but I've seen no real results. A series of tests were run — I've got optimum blood pressure, low cholesterol, and I am not diabetic. But, when my cortisol levels were checked — they were very high. The doctor suspected there was a possibility that I might have Cushing's Syndrome — but another test was run and that came up negative.

I was doing research on the internet, and I found that there was a link between excessive cortisol and depression. I was diagnosed with clinical depression when I was 12 (I am now 21). And I am currently untreated. What is the link between cortisol levels and depression? Are excessive cortisol levels a physical manifestation of depression? Or does an excess of cortisol for some other reason cause depression? Does an excessive amount of cortisol cause weight gain, or in my case prohibit weight loss? And if there is a connection — will treatment for my clinical depression (in the form of prescription pills) help me?

I've been unable to find answers anywhere, or at least a good source to tell me to stop worrying — any help would be appreciated

Thank you,  
"Chubby in Chinatown"

### **Answer**

Dear "Chubby in Chinatown,"

You've taken the first step by going to see a health care provider. Learning about your health status — checking cholesterol and blood pressure — is a good place to start. Many people with depression deal with body weight fluctuations. Without knowing the specifics of your diet, exercise habits, and medical history, it is difficult to determine exactly what effect cortisol levels will have on your weight.

As far as the relationship between depression and cortisol goes, here's what is known. Cortisol is

a hormone secreted by the body that regulates metabolism and blood pressure. It also plays a major role in the stress response, and has become known as "the stress hormone." During stress, our body enters a state of "fight or flight." This happens when some sort of sensory stimulus (e.g., thunder, traffic, a fight with your friend, etc.) triggers the brain. The brain perceives a threat, and activates the nervous and endocrine systems to prepare the body to quickly defend or flee. One physiological aspect of the fight or flight response is the release of cortisol. During physical and/or psychological stress, cortisol works to break down fatty acids to use for energy. Once the brain perceives the threat is gone, it sends signals to return the body to a state of calmness. With ongoing stress, however, the body is in a chronic state of stress, and the adrenal glands are constantly secreting cortisol. Too much cortisol is harmful. For example, excessive cortisol breaks down white blood cells, hindering the immune system. A surplus also increases the amount of free fatty acids in the arteries, which, over time, can lead to clogged arteries. In addition, the amount of cortisol secreted during stress varies from person to person.

Whether or not stress causes high levels of cortisol and weight gain is not clear. Since the role of cortisol during stress is to provide energy for the body, the result can be an increase in appetite. So, stress may lead to cortisol levels that trigger one to eat, which can cause weight gain, difficulty losing weight, or weight gain in certain areas of the body (scientists have learned that elevated cortisol levels tend to cause fat deposition in the abdominal area).

In both children and adults with depression, doctors have found elevated cortisol levels, similar to people who experience chronic stress. It is not completely clear whether high cortisol levels cause depression. Not all people who have high cortisol levels develop depression, and not all people with depression have high cortisol levels. Clinical depression is a complex condition triggered by a variety of genetic, environmental, and biochemical factors.

Have you spoken with or do you plan to speak with your health care provider about being diagnosed with depression at the age of twelve? If not, you may want to consider making an appointment to talk about that and discuss if medication for depression is right for you. Medication can be an effective treatment for depression, but some of these medications cause body weight to fluctuate. Talk with your doctor and/or mental health provider about your weight loss goals so s/he can take that into consideration if you choose to take prescription medication. Research indicates medication in conjunction with talk therapy is the most effective treatment strategy for depression.

You also mention that you already follow a reasonable exercise plan. Keep it up! Regular physical activity is worth the effort. Exercise can trigger an elevation in mood and create a better overall sense of well-being. In fact, studies have shown that people can improve their symptoms of depression by exercising at least three times per week. Even 10 to 15 minutes of activity can help to improve mood in the short-term. To help maintain your motivation, find a fun activity, make a playlist of songs that pump you up, and/or make plans with a workout buddy.

If you find yourself regularly enjoying exercise but still not meeting your weight loss goals, schedule an appointment with a personal trainer or exercise physiologist. It may be that the type, intensity, frequency, and duration of your physical activity are not optimal for weight loss for you. Or, it may be that your goals are unrealistic. To best figure it out, partner up with health care and fitness experts.

Using a "baby steps" strategy is one of the best ways to proceed. Take it one day at a time, and next schedule another appointment with your health care provider.

Alice!

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