

Stress, cortisol and mental health

Introduction

Cortisol is often known as the body's "stress hormone," usually in a negative way. But cortisol is not harmful on its own. It helps your body respond to challenges, wake up in the morning, stay alert and manage energy throughout the day. Short-term increases in cortisol are normal and important.

The problem comes when stress lasts a long time instead of being short-term. This is called ongoing or chronic stress. It can affect how your body manages stress and involves many systems, including the brain, immune system and behaviour. Over time, this can influence how you feel, think and cope.

In this blog, we'll explore what cortisol is, how ongoing stress affects the body, how it links to mental health, and simple ways to support a healthier stress system.

What's the difference: Short-term vs long-term stress

Acute (short-term) stress

Acute stress happens when you face an immediate challenge, like a deadline or a difficult situation.

Your body switches on the fight-or-flight response, an alarm system that helps you stay alert and respond quickly. Cortisol and other stress signals increase to help you act. Once the challenge is over, your body returns to normal. This is a healthy response.

Chronic (long-term) stress

Chronic stress happens when pressures last a long time, such as school stress, money worries or ongoing uncertainty.

The stress response stays switched on for longer. Over time, this can affect sleep, mood, energy and coping skills, and may also affect mental health.

Why it matters

Short-term stress is usually well controlled by the body. But ongoing stress can affect several systems at once, including hormones like cortisol, the brain, the immune system and behaviours such as sleep and activity.

This is why stress affects people in different ways.

What is cortisol?

Cortisol is a hormone made by small glands above your kidneys. It is released when you are stressed and also follows a daily rhythm.

It helps your body manage energy, control the immune system and support thinking and attention. You can think of it as one of the body's main "stress and energy" messengers.

Cortisol and daily rhythm

Cortisol changes throughout the day. It is highest in the morning to help you wake up, then gradually falls during the day, and is lowest at night to help you sleep.

If this pattern is disrupted, you may feel tired during the day and more awake at night.

The stress system in your body

Cortisol is controlled by a system in the brain called the HPA axis. It works like a loop: the brain signals cortisol release, cortisol helps you respond to stress, and signals then tell the body to switch off the response.

This system normally keeps stress short and balanced.

Cortisol also works alongside other systems in the body, including the nervous system and immune system. Stress is not controlled by one hormone alone.

What happens when stress lasts a long time

Ongoing stress doesn't just mean 'too much cortisol'. It can change how the stress system works. This may include longer stress responses, weaker feedback signals, changes in daily rhythms and less sensitive stress responses.

Over time, the body can become less sensitive to cortisol, making it harder to switch off the stress response and return to balance.

Cortisol normally helps reduce inflammation, but with ongoing stress this system may not work as well. This can lead to chronic (long-term) inflammation, which has been linked to some mental health difficulties.

Stress can also affect how the body uses tryptophan, which helps make serotonin (a brain chemical linked to mood and sleep). This may affect how you feel.

Finally, stress can disrupt sleep and daily routines, which can further affect energy and mood.

How stress affects your brain

Stress affects several key areas of the brain. The hippocampus, which is important for memory and learning, may be affected by ongoing stress. The prefrontal cortex, which helps with decision-making and focus, can become less efficient. The amygdala, which detects threat, may become more reactive, increasing anxiety.

Stress can also reduce BDNF, a protein that helps the brain adapt and recover.

Changes in mood and motivation

Stress affects brain chemicals linked to mood, motivation and thinking, including serotonin, dopamine and other systems involved in focus and reward. This can lead to lower motivation, less enjoyment in activities, or feeling mentally "foggy" or tired.

The cycle of stress

Stress can create a cycle that reinforces itself, for example stress affects sleep, poor sleep increases stress, low energy reduces activity, and reduced activity affects mood. Over time, this can make stress harder to manage.

Why people respond differently

People respond to stress in different ways. This can depend on genetics, early life experiences, environment and lifestyle, which is why some people develop anxiety or depression under stress, while others cope more easily.

What you can do to support your stress system

These approaches don't remove stress completely. Instead, they help your body manage it more effectively.

Support your sleep

Sleep helps reset the stress system. Keep regular sleep and wake times, reduce screens and bright light at night, and follow a calm bedtime routine.

Move your body

Physical activity helps balance stress hormones, improve mood and support sleep. Walking, cycling or regular movement all help.

Eat to support your brain

Food affects your stress system through the brain and gut. Eat a variety of plant foods, include healthy fats like omega-3s, and reduce highly processed and sugary foods.

Manage stress where possible

Make small changes to reduce pressure, set boundaries, ask for support, and try relaxation or mindfulness techniques.

Stay connected

Social support helps reduce stress and supports mood and resilience.

Conclusion

Cortisol is an important part of how your body responds to stress. The problem is not cortisol itself, but how ongoing stress affects the systems that control it.

These changes can affect your brain, body and behaviour, but they are not permanent.

Understanding what's happening is the first step. Small, steady changes can help your body regain balance and support wellbeing.

Glossary

Cortisol – Hormone made by the adrenal glands that helps your body respond to stress and manage energy.

Chronic stress – Stress that lasts weeks or months and can affect mood, sleep, and energy.

Acute stress – Short-term stress that ends once the challenge is over.

HPA axis – The body's main stress system linking brain and adrenal glands to regulate cortisol.

Feedback loop – A system where one action triggers another, which helps control the first action.

Inflammation – Body's response to injury or infection. Long-term inflammation can affect mood.

Neurotransmitters – Brain chemicals that send signals between cells, including serotonin, dopamine, and GABA.

Gut-brain connection – The communication between gut and brain that affects mood, sleep, and stress.

BDNF – Protein that helps the brain grow and recover from stress.

Neurogenesis – Making new brain cells, which stress can reduce in some areas.

Omega-3 fats – Healthy fats that support brain function and reduce inflammation.

Lifestyle factors – Daily habits like sleep, exercise, diet, and social life that affect health.