SLEEP & STRESS

Cortisol Is Not Your Body's Villain

Here is why one hormone cannot explain every bad night, tired morning or stressful week-and what deserves your attention instead.

The hormone behind everything

You sleep badly, wake exhausted and open your phone. Within minutes, the internet has supplied a culprit: cortisol. It is blamed for the broken night, the difficult morning and the feeling that your body is somehow working against you.

Cortisol is a stress-sensitive hormone, and research does connect its daily pattern with health. But that is not the same as saying every tired person has "high cortisol," or that lowering one reading will solve a complicated set of problems. The evidence is far less tidy than the posts built around it.

Sleep itself is complicated. Your brain moves through stages of non-rapid eye movement sleep and rapid eye movement sleep, while interrupted sleep may prevent enough time in particular stages. Poor-quality sleep can affect your thinking, mental and physical health, and everyday functioning. Cortisol may be part of this biological picture without being the explanation for all of it.

That distinction matters because a persuasive hormone story can distract you from more direct possibilities: insufficient sleep, insomnia, an irregular schedule, caffeine or alcohol, medicines, anxiety, pain, another health condition or a separate sleep disorder. Sometimes the cause of disturbed sleep remains unknown. A single villain is appealing. It is not what these sources support.

One number is not a rhythm

Cortisol changes from morning to evening. Researchers call that pattern the diurnal cortisol slope. A 2018 systematic review and meta-analysis examined 179 associations from 80 studies and found that flatter slopes were associated with poorer health overall. The average association was significant but modest, with an effect size of 0.147.

The association appeared in 10 of the 12 categories of emotional and physical health outcomes examined. It was strongest for immune and inflammation outcomes, where the effect size was 0.288. Those findings make the daily pattern scientifically interesting. They do not turn one

cortisol measurement into a universal health verdict.

The review's authors discussed flatter slopes as potentially being either a marker or a mechanism. That uncertainty is crucial. A marker travels alongside a health problem; a mechanism helps produce it. If research has not fully separated those roles, an online claim that treats cortisol as the settled cause is running ahead of the evidence.

A cortisol result also cannot tell you, by itself, why you are sleeping poorly. Sleep disorders include insomnia, sleep apnea, restless legs syndrome, circadian rhythm disorders and other conditions. Their origins differ and may involve physical illness, mental illness, medicines, genetics, substances, work patterns or factors that are not yet understood. Cortisol does not erase those distinctions.

A single villain is appealing. It is not what these sources support.

Association is not an answer

The internet often compresses a chain of associations into a diagnosis: stress affects sleep, cortisol responds to stress, therefore your sleep problem is caused by cortisol. Each step can sound plausible while the conclusion remains unproved.

A 2022 systematic review found only 10 controlled intervention studies examining physical activity, cortisol and sleep together. Its analysis suggested that physical activity lowered cortisol and improved sleep quality. But confidence in those conclusions was moderate for cortisol and low for sleep, and the effects were relatively small.

The participants also limit what can be claimed. The studies predominantly involved people with breast cancer, included few men and included no older adults. The authors specifically warned against assuming that the results apply to the general population. They proposed that people with long-term conditions or poor mental health might benefit most, but said more research was required.

This is a useful lesson in reading hormone claims. A result from a particular group is not automatically a rule for everyone. A change in a biomarker is not automatically proof that the biomarker caused every symptom. And an intervention affecting cortisol and sleep does not establish that cortisol was the sole bridge between them.

Cortisol regulation and sleep quality appear intertwined. "Intertwined" is the honest word. It allows for interaction, uncertainty and more than one route through the problem. It does not give you a catchy diagnosis, but it is closer to what the research can actually defend.

Your sleep deserves its own investigation

If your real problem is that you cannot fall asleep, stay asleep or feel refreshed, begin with the sleep problem rather than an online hormone label. Acute insomnia can follow work stress, family pressure or a traumatic event and may last days or weeks. Ongoing insomnia can be related to another medical condition, medicine, substance or sleep disorder, although sometimes it is the primary problem.

Pay attention to what is happening, not merely how exhausted you feel. Regularly taking more than 30 minutes to fall asleep, repeatedly waking and struggling to return to sleep, waking too early, or often feeling sleepy during the day can signal a sleep disorder. Loud snoring, gasping, choking sounds or pauses in breathing during sleep also warrant attention.

This is where self-help stops being enough. Speak with a health professional if poor sleep persists, disrupts daytime functioning or comes with signs of another sleep disorder. Daytime sleepiness can affect concentration, learning and memory; drowsiness while driving can lead to a crash. A clinician may review your health and sleep history, examine you and, when appropriate, recommend a sleep study.

That assessment looks for patterns and competing explanations. A sleep study can record brain activity, eye movements, breathing, blood pressure, heart activity and muscle activity over a night. The point is not that everyone needs one. It is that a genuine sleep disorder requires more than a guess about one hormone.

Light matters too, but the evidence again resists slogans. A 2020 systematic review found that mistimed light could affect circadian rhythms, including the timing of melatonin. Yet many studies were tiny: 39 of 128 included 10 or fewer participants, and only 15 reports met the review's stricter criteria for deeper analysis. Even familiar sleep advice can rest on evidence with important limits.

Take the pattern, not the label

Over the next week, replace the phrase "my cortisol is high" with a description of what is actually happening. Notice whether the difficulty is falling asleep, waking repeatedly, waking too early or becoming sleepy at the wrong time. Also note obvious context such as shift work, travel, caffeine, alcohol, medicines, pain or emotional distress.

If you decide to discuss it with a health professional, say: "My sleep has changed, and this is the pattern." Explain how it affects your attention, mood, energy or ability to function. Mention snoring, gasping, uncomfortable leg sensations or dangerous daytime sleepiness if any are present. Ask whether another health condition, medicine or sleep disorder could be

contributing.

If you already have a cortisol result, ask what the measurement can establish, whether the timing matters and whether it fits your wider health picture. Do not assume that an abnormal-looking number explains every symptom-or that an online plan to "lower cortisol" addresses the reason the test was done.

This step takes no supplement, test kit or elaborate routine. It takes a clear account of your sleep and one direct conversation. On Monday, bring the pattern instead of the internet's diagnosis. That gives a clinician something useful to investigate-and gives you a better starting point than declaring war on a hormone.

Where this comes from

- Sleep Disorders

  MedlinePlus, U.S. National Library of Medicine · https://medlineplus.gov/sleepdisorders.html
- Insomnia

  MedlinePlus, U.S. National Library of Medicine · https://medlineplus.gov/insomnia.html
- Sleep Science and Sleep Disorders | NHLBI, NIH

  National Heart, Lung, and Blood Institute · https://www.nhlbi.nih.gov/science/sleep-science-and-sleep-disorders
- Sleep Health | NHLBI, NIH

  National Heart, Lung, and Blood Institute · https://www.nhlbi.nih.gov/health-topics/education-and-awareness/sleep-health
- The effects of physical activity on cortisol and sleep: A systematic review and meta-analysis.

  Psychoneuroendocrinology, 2022 · https://pubmed.ncbi.nlm.nih.gov/35777076/
- Diurnal cortisol slopes and mental and physical health outcomes: A systematic review and meta-analysis.

  Psychoneuroendocrinology, 2018 · https://pubmed.ncbi.nlm.nih.gov/28578301/
- Migraine and sleep disorders: a systematic review.

  The journal of headache and pain, 2020 · https://pubmed.ncbi.nlm.nih.gov/33109076/
- Systematic review of light exposure impact on human circadian rhythm.

  Chronobiology international, 2020 · https://pubmed.ncbi.nlm.nih.gov/30311830/