



Research Summary: Insomnia #1

As featured in Dr. Kenny Mittelstadt's video:
"Insomnia: When You Can't Sleep Even After Trying Everything"
Date of Publication: 04/18/2026

Research Context:

This week's topic explores how insomnia isn't just about poor sleep habits or not trying hard enough to "fix" your sleep. For many people, especially those who feel like they've already tried everything, the issue runs deeper. It often reflects a mismatch between your body's internal clock, your stress response, and how your energy systems are regulated throughout the day.

Sleep is not simply something that happens because you're tired. It depends on multiple systems lining up at the right time, including your circadian rhythm (your internal timing system) and your sleep pressure (how much your body needs rest).

When those signals fall out of sync, you can feel exhausted but still unable to fall asleep or stay asleep.

Key Findings from the Research:

Study 1 (PMID 39663626):

This study explored how blood sugar regulation connects to sleep quality, and the findings help explain a pattern many people experience but rarely understand. Researchers found that individuals with more unstable blood sugar patterns had poorer sleep overall, including more frequent nighttime awakenings and less restorative sleep. In everyday terms, your body relies on stable blood sugar to maintain a steady state during the night. When blood sugar drops too low, even slightly, your body responds by releasing stress hormones like cortisol and adrenaline to bring it back up. That response is protective, but it also signals your brain to wake up.

Study 2 (PMID 34104338):

This study focused on cortisol, your body's primary stress hormone, and how its timing influences sleep patterns. Under normal conditions, cortisol follows a predictable rhythm. It's higher in the morning to help you wake up and gradually lowers throughout the day so your body can transition into rest at night. Researchers found that when cortisol levels remain elevated later in the day or become dysregulated, sleep quality tends to suffer. People in these patterns often have difficulty falling asleep, staying asleep, or reaching deeper stages of rest. What this looks like in real life is the "tired but wired" feeling. You may feel physically exhausted, but your mind stays active or alert once you get into bed. This isn't just psychological. It reflects a system that hasn't fully shifted into a recovery state.

Study 3 (PMID 35502706):

This systematic review examined what's known as the "two-process model" of sleep regulation, which is one of the most important frameworks for understanding insomnia. According to this model, sleep depends on two systems working together. The first is your circadian rhythm, your internal clock that determines when your body expects to sleep. The second is sleep pressure, which builds the longer you stay awake. Researchers found that when these two systems fall out of alignment, sleep becomes inconsistent and unpredictable. You can feel tired but unable to fall asleep, or fall asleep easily but wake up during the night. This helps explain why many people feel like they've "tried everything" without success. If your timing and pressure are not aligned, adding supplements or improving sleep hygiene may not fully resolve the issue.



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Functional Medicine Connections:

Here's how these pieces begin to fit together.

Your body operates through a coordinated communication network, where your brain, hormones, metabolism, and nervous system are constantly exchanging signals about when to be alert and when to recover. Sleep is one of the clearest reflections of how well that communication is working.

When stress remains elevated, cortisol can stay higher later into the evening, keeping your system more activated at a time when it should be winding down. At the same time, unstable blood sugar can create subtle drops during the night, which your body interprets as a stress signal and responds by waking you up.

Layer in inconsistent routines, late-night stimulation, or irregular eating patterns, and your internal clock becomes less predictable.

This is why insomnia often isn't random. It reflects a pattern of misaligned signals across multiple systems that are no longer working in sync.

Practical Reflections & Takeaways:

Think about your own patterns for a moment.

Do your sleep disruptions tend to happen at the same time each night, almost like your body is following a predictable rhythm? Do periods of higher stress, irregular meals, or inconsistent schedules seem to line up with worse sleep?

You might also notice that some nights feel easier than others without a clear reason why, while other nights feel restless even when you've done everything "right." That kind of inconsistency is often a meaningful clue rather than something to ignore.

It can also be helpful to consider how you feel during the day. Are there energy dips, cravings, or moments where your focus drops that seem to connect back to your nights?

Want Dr. Kenny's Eyes on Your Case?

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References:

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- Cortisol rhythms and sleep disturbance: Associations with insomnia symptoms. *Journal of Clinical Endocrinology & Metabolism*. 2021. [PMID: 34104338](#).
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