

NEWS

# Sleep problems in autism, explained

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A good night's rest isn't guaranteed for anyone, but it is downright elusive for many people with autism. Individuals on the spectrum often have trouble falling and staying asleep.

And that may worsen certain features of their condition, such as **repetitive behaviors**, which can, in turn, make sleeping even more difficult.

Given this disruptive feedback loop, sleep problems are **among the most urgent concerns** for families grappling with autism. But so far, this also happens to be among the least-studied aspects of autism.

Here's what researchers know so far about the causes and consequences of — and treatments for — sleep problems in autism.

## **How common are sleep problems in children with autism?**

A 2019 study, one of the largest to investigate the prevalence of sleep problems in autism, suggested that nearly 80 percent of **autistic preschoolers have disrupted sleep**. Sleep problems are twice as common among children with autism as they are among typical children or those with other developmental conditions.

## **What types of sleep problems are common in autism?**

People with autism **tend to have insomnia**: It takes them an average of 11 minutes longer than typical people to fall asleep, and many wake up frequently during the night. Some people with the condition have sleep apnea, a condition that causes them to stop breathing several times during the night.

Sleep in people with autism may also be less restorative than it is for people in the general population. They spend about 15 percent of their sleeping time in the **rapid eye movement** (REM) stage, which is critical for learning and retaining memories. Most neurotypical people, by contrast, spend about 23 percent of their nightly rest in REM.

### **Does this lack of good sleep have consequences?**

There is mounting evidence that too little sleep can exacerbate autism features, such as poor social skills. Children who do not get enough sleep often have **more severe repetitive behaviors** and a tougher time making friends than other people on the spectrum. They also tend to score lower on tests of intelligence. However, it is unclear whether these problems stem from poor sleep, contribute to it or both.

One 2009 study found that children with autism who have sleep difficulties are more hyperactive and easily distracted than those who sleep well<sup>1</sup>.

### **Why do people with autism have difficulty sleeping?**

Many people with autism have **other conditions**, such as **gastrointestinal problems**, **attention deficit hyperactivity disorder** (ADHD) or **anxiety**, and each of those is known to disrupt sleep. Cramps from constipation, for instance, may keep a person with autism up at night. **Sensory sensitivities** to light, sound or touch may contribute to difficulty sleeping. Sleep problems may also be an indicator of **depression in autistic people**, though whether it is a cause or a result of sleep difficulties is unclear.

People with these other conditions may also take medications that affect sleep. For example, many people with ADHD **take stimulants**, which are known to cause insomnia.

In some cases, people on the spectrum carry mutations that make them prone to sleep problems. Studies suggest that individuals with autism are more likely than typical people to have mutations in genes that **govern the sleep-wake cycle** or those that have **links to insomnia**. Some studies suggest that people on the spectrum carry mutations that affect **levels of melatonin**, a natural hormone that controls sleep.

### **How can researchers assess sleep problems in people with autism?**

Polysomnography is the most common and thorough type of sleep test. It tracks a person's brain waves, eye and limb movement, and breathing patterns during sleep. Because it requires multiple sensors, wires and computers, it is typically done in a lab.

But this gold-standard method is not always practical for people with autism, many of whom require specific routines at bedtime. At least one research group has brought **polysomnography equipment into the homes** of people with autism to try to get around this problem.

A less cumbersome sleep test is actigraphy, in which a wristwatch-like device records a person's movements throughout the night. People can use the device at home to record the amount of time a person sleeps each night.

Researchers can also learn about sleep patterns by interviewing families or asking them to maintain sleep diaries. But these methods are error-prone because they rely on people's memories.

### **Are there treatments available to help people with autism sleep better?**

In some ways, the fix can be straightforward: Establishing a routine, such as an order of activities at bedtime, can often help a person fall asleep; so can changing the temperature or **lighting** in a bedroom. Sticking with regular bed and wake times can put the brain and body on a schedule that makes sleep more reliable.

The U.S. Food and Drug administration has approved insomnia drugs, such as Ambien, for adults with autism but not for children. For more serious problems such as sleep apnea, clinicians sometimes recommend a nighttime breathing device such as a continuous positive airway pressure (CPAP) machine or, in rare cases, surgery.

But for many sleep issues, **melatonin supplements** may be a good option. Some research suggests the supplements help children with autism fall asleep faster and get better-quality sleep.

### **Would better sleep improve quality of life for people on the spectrum?**

Maybe. No large, definitive study exists on this topic. But research has shown that **typical children** and **those with autism** who undergo surgery to alleviate breathing trouble during sleep show better social communication and attention as well as fewer repetitive behaviors. Parents reported similar improvements in a small study of children with autism who took melatonin supplements.

Better sleep is "not going to cure autism," says pediatrician **Angela Maxwell-Horn**, assistant professor of pediatrics at Vanderbilt University in Nashville, Tennessee. But, she says, children with autism who get back on a regular sleeping schedule seem to learn better, are less irritable and have fewer problem behaviors.

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1. Goldman S.E. *et al. Dev. Neuropsychol.* **34**, 560-573 (2009) **PubMed**