

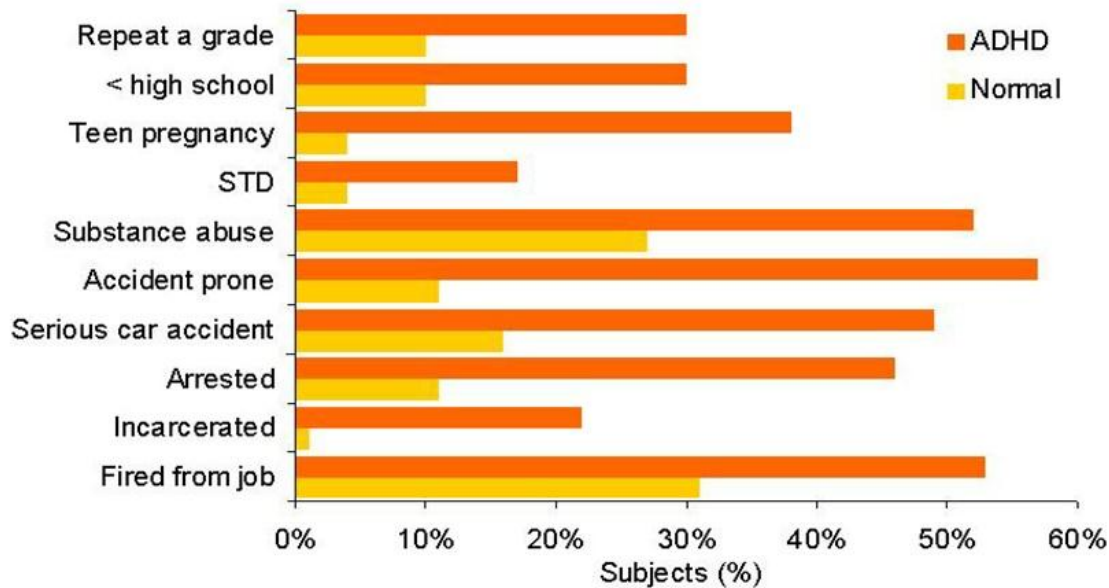
ADHD and Sleep

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Attention-deficit/hyperactivity disorder (ADHD) is a behavioral disorder that is neurobiological in nature, and continues through the life-span. Symptoms include behaviors grouped into three main categories: hyperactivity, inattentiveness, and impulsivity behaviors.

INATTENTIVE BEHAVIORS	IMPULSIVE BEHAVIORS	HYPERACTIVE BEHAVIORS
Difficulty staying focused Difficulty organizing tasks Difficulty listening or paying attention Forgetful or loses things Difficulty with or avoidance of tasks that require sustained focus over a period of time Failure to follow instructions or finish assignments Prone to make careless mistakes or ignore details	Rash decision-making Prone to take action without considering the long-term effects Low self-control Prone to interrupt frequently	Prone to squirming, tapping, or fidgeting Difficulty sitting still Impatient or unable to wait their turn Excessive talking Extreme restlessness Inability to stay quiet when appropriate

Due to the nature of the symptoms, many children with ADHD exhibit poor academic performance and other behavioral issues in school environments, socially and emotionally. Adults with ADHD may have difficulty keeping a job, paying their bills on time, or maintaining relationships as a result of the disorder. In general, individuals with ADHD have a higher incidence rate of many problematic behaviors, as demonstrated by the chart below:



Barkley RA. *Attention-Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment*, 1998. Barkley RA, et al. *JAACAP*. 1990;29:546-557. Biederman J, et al. *Arch Gen Psychiatry*. 1996;53:437-446. Weiss et al. *J Am Acad Child Psychiatry*. 1985;24:211-220. Satterfield, Schell. *JAACAP*. 1997;36:1726-1735. Biederman J, et al. *Am J Psychiatry*. 1995;152:1652-1658.

Treating ADHD

Treatment for ADHD typically involves a combination of behavior therapy, medication, and school or work accommodations.

For children younger than age 6, it's recommended that behavior therapy is used first to manage symptoms before involving medication, due to the risks posed by side effects.

Behavior therapy for ADHD

ADHD-focused behavior therapy for children focuses on helping the child stop problem behaviors associated with ADHD symptoms, such as interrupting in class and squirming, and replace them with positive behaviors. Parents can also be included in behavior therapy, so they can learn coaching techniques to use with their child and continue the behavior modifications outside of the therapy setting.

Adult individuals benefit from behavioral therapy as well, although it will focus on skills relevant to helping interpersonal relationships and job performance, such as organization, listening, and staying focused.

School and work accommodations for ADHD

The majority of children with ADHD are not in special education classes, so it's likely their teachers haven't received any special training for ADHD. In these scenarios, parents may find it beneficial to inform the teacher of the ADHD diagnosis, involve the school counselor in developing a special coaching or lesson program, or provide the following guidance:

- Make assignments clear and ensure the student understands what is required.
- Avoid long, repetitive assignments where possible.
- Allow regular breaks to exercise, stand up, or move about the classroom.
- Minimize noisy or moving distractions in the classroom.
- Give positive reinforcement for good behavior.

Children with ADHD may be eligible for special accommodations under the [Individuals with Disabilities in Education Act \(IDEA\)](#).

How does ADHD affect sleep?

ADHD-related disturbed sleep typically appears around [age 12](#), and may not coincide with the onset of other symptoms. Researchers still aren't sure why ADHD and sleep disorders occur together. However, ADHD symptoms and medication both commonly interfere with sleep, and sleep deprivation in turn can worsen ADHD symptoms.

- As many as 50 percent of children with ADHD suffer from sleep problems.
- Children with ADHD experience higher levels of daytime sleepiness.
- Children with ADHD are more than twice as likely to suffer from sleep-disordered breathing.
- Children with ADHD are more likely to have periodic limb movement disorder (PLMD) and restless legs syndrome (RLS), resulting in less restful sleep.
- Nearly 75 percent of adults with ADHD report suffering from insomnia.

Sleep disorders associated with ADHD

The most common sleep problems associated with ADHD include:

- Anxiety or resistance about bedtime (for children with ADHD)
- Difficulty falling asleep at night
- Difficulty waking up in the morning
- Sleep-disordered breathing and sleep apnea
- Interrupted sleep (waking during the night)
- Excessive daytime sleepiness
- Restless legs syndrome or periodic limb movement disorder
- Delayed sleep-phase disorder

Individuals with ADHD are also more likely to report a higher rate of nightmares, and to demonstrate parasomnias like sleepwalking.

Insomnia

A large majority of adults with ADHD experience sleep-onset insomnia, meaning that they have difficulty falling asleep. Individuals with ADHD may get a sudden burst of energy as soon as they get into bed, or they can't get their mind to stop racing. As a result, it can take as long as 1 hour to fall asleep. Up to 15 percent of children with ADHD suffer from sleep-onset insomnia, which increases to 50 percent during adolescence. These numbers are twice as high as those for children and teenagers without ADHD.

Individuals with ADHD also report suffering from sleep-maintenance insomnia. Once they do fall asleep, it isn't restful. Their sleep is fitful, with much tossing and turning, and they're easily woken up by noise. Many partners may choose to sleep in a different bed as a result. This lack of restful sleep leads to difficulty waking up and drowsiness during the day for many individuals with ADHD.

Sleep apnea

Sleep-disordered breathing or sleep apnea affects about 3 percent of the general population. By contrast, almost one-third of individuals with ADHD experience sleep-disordered breathing issues ranging from snoring to obstructive sleep apnea. Obesity, frequently linked to sleep apnea, is also present in about 40 percent of individuals with ADHD.

[Restless legs syndrome](#), also known as Willis-Ekbom disease, is a neurological disorder. People with RLS experience a tingling sensation in their lower limbs and an irresistible urge to move them to attempt to find relief, particularly when they are asleep or at rest. RLS affects around 2 percent of the general population, but as many as 50 percent of individuals with ADHD.

[Periodic limb movement disorder](#) (PLMD) describes sudden limb movement a person experiences periodically during sleep. The muscle twitching is strong enough to wake the person from sleep.

[Delayed sleep-phase disorder](#) is a circadian rhythm disorder that describes a person whose circadian clock is out of synch with normal sleep-wake patterns. Individuals with delayed sleep-phase disorder go to sleep and wake up later than average, which results in daytime sleepiness.

[Treatment options for ADHD-related sleep issues](#)

Symptoms of ADHD are commonly treated by medication. Unfortunately, many medications that help manage the symptoms of ADHD can also cause insomnia, which in turn worsens ADHD symptoms.

Sleep problems are rare in children. Only about 6 percent of children without ADHD experience sleep issues or have a sleep disorder. By contrast, that number is as high as 50 percent for children with ADHD. The 2009 *Pediatrics in Review* reported that stimulant medication correlates with disturbed sleep in 29% of children with ADHD. With methylphenidate, the number can climb to as high as 64% of children having insomnia.

MEDICATION	TRADE NAME	STIMULANT?	EFFECTS ON SLEEP?	OTHER SIDE EFFECTS
Dextroamphetamine Sulf-Saccharate	Adderall	Yes	Yes	Reduced appetite, weight loss, irritability, tics or twitching
Dextroamphetamine Sulfate	Dexedrine, Dexedrine Spansule	Yes	Yes	Reduced appetite, weight loss, irritability, tics or twitching
Dexmethylphenidate HCL	Focalin, Focalin XR	Yes	Yes	Reduced appetite, weight loss, irritability, tics or twitching
Methylphenidate HCL	Methylin, Ritalin, Aptensio XR, Concerta, Metadate CD, Metadate ER, Methylin ER, Ritalin LA, Ritalin SR, Quillivant XR	Yes	Yes	Reduced appetite, weight loss, irritability, tics or twitching
Methylphenidate	Daytrana Transdermal patch	Yes	Yes	Reduced appetite, weight loss, irritability, tics or twitching, skin irritation or discoloration
Amphetamine Sulfate	Evekeo	Yes	Yes	Reduced appetite, weight loss, irritability, tics or twitching
Lisdexamfetamine Dimesylate	Vyvanse	Yes	Yes	Reduced appetite, weight loss, irritability, tics or twitching
Clonidine HCL	Catapres, Kapvay	No	Yes	Drowsiness, vertigo, dry mouth, irritability, low blood pressure
Clonidine	Catapres-TTS patch	No	Yes	Drowsiness, vertigo, dry mouth, irritability, low blood pressure
Guanfacine HCL	Intuniv, Tenex	No	Yes	Drowsiness, headache, abdominal pain, low blood pressure

Amoxetine HCL	Strattera	No	Yes	Disturbed sleep, drowsiness, vertigo, dry mouth, anxiety, nausea or upset stomach, liver damage, increased risk of suicide for young adults
Nortriptyline HCL	Aventyl, Pamelor	Antidepressant	Yes	Drowsiness, vertigo, dry mouth, anxiety, nausea or upset stomach, elevated heart rate, increased risk of suicide for young adults, increased risk of heart arrhythmias
Desipramine HCL	Norpramin	Antidepressant	Yes	Drowsiness, vertigo, dry mouth, anxiety, nausea or upset stomach, elevated heart rate, increased risk of suicide for young adults, increased risk of heart arrhythmias, fatal heart problems for children
Imipramine HCL	Tofranil	Antidepressant	Yes	Drowsiness, vertigo, dry mouth, anxiety, nausea or upset stomach, elevated heart rate, increased risk of suicide for young adults, increased risk of heart arrhythmias
Bupropion HCL	Wellbutrin, Wellbutrin SR	Antidepressant	Yes	Headaches, increased risk of suicide for young adults, increased risk of seizures

Addressing sleep issues can help to resolve non-emotional symptoms of ADHD for children, and may improve daytime sleepiness, inattention, and hyperactivity.

Side effects of common ADHD medications

ADHD medication can be short-acting (4-6 hours) or long-lasting (6-12 hours). Either form requires frequent dosing.

The longer-acting, the greater the side effects, especially in regards to appetite and sleep issues. However, longer-acting stimulants are often preferred since they require less dosages (one less thing to remember) and may reduce variability in mood during the course of the day.

Sleep therapy options

Cognitive behavioral therapy (CBT) can help resolve sleep issues for some adults with ADHD. CBT is a form of psychotherapy that helps you recognize your thought patterns and manage them so you are better equipped to minimize anxiety and hyperactive thoughts before bed.

Relaxation exercises and stimulus control techniques have also been shown to be effective. Meditation and deep breathing can reduce stress and help you fall asleep. Stimulus control is a way of managing your time spent in your bed so you train your mind to only associate it with sleep.

Sleep-specific therapy options include sleep restriction and light therapy.

Sleep restriction is a form of therapy in which a strict bedtime and wake schedule is set and followed, regardless of how much sleep the person had or how tired they feel upon waking up. Daytime napping is not allowed. The idea is to train the body to associate the scheduled period of time with sleep. Sleep restriction therapy has proven to be helpful for individuals with ADHD who also suffer from insomnia.

Light therapy is designed to help individuals with circadian rhythm disorders, of which delayed sleep phase syndrome is most common among individuals with ADHD. In light therapy, an individual uses a bright artificial light box or light device to help re-synchronize their circadian cycle by spending a set amount of time in front of the box in the morning or at night, depending on their unique needs.

Pharmacological options

Sleep medicine and sleeping pills can also prove effective in helping treat ADHD-related insomnia. However, all these pills come with side effects of their own that could interfere with other symptoms of ADHD. While sleep medication is often used to help children with ADHD, research is still inconclusive on the benefits and safety of these as a long-term solution for managing ADHD-related insomnia.

Melatonin can be used to help induce sleep and reduce sleep problems, but it has not been shown to improve any symptoms of ADHD. Melatonin is a hormone produced naturally by the pineal gland that helps regulate the sleep-wake cycle. Many people with sleep issues ranging from jet lag to insomnia use melatonin supplements or agonists (both available over-the-counter) to help them fall asleep.

Children with ADHD can take higher doses of melatonin than their non-ADHD counterparts. However, the increased dosage may put the child at increased risk for seizures, so parents should discuss melatonin as a treatment option with their doctor before dispensing it themselves. Children can start by taking 0.5 mg of melatonin 1 hour before bed, with dosages as high as 3-5 mg. Adult dosages, on the other hand, can range from 0.3 to 20 mg per day.

Treating sleep problems in adults with ADHD

If you have ADHD and believe you may have a sleep disorder, talk to your doctor. They will take action to diagnose you, starting with questions about your bedtime, how long it takes you to fall asleep, whether you wake up often during the night or have trouble waking in the morning, and your level of fatigue during the day. Your doctor may give you a sleep diary with directions to record your sleeping habits over a series of weeks.

Doctors use two main diagnostic tests to diagnose sleep disorders. During a nocturnal polysomnography test, individuals sleep in a laboratory setting while professionals and equipment monitor their vital signs and brain activity. Alternately, individuals may be given a portable form of this equipment to conduct a sleep test at their home. During the sleep test, the doctor will keep track of the individual's overall sleep time as well as look for breathing issues, irregular limb movements, and any other abnormal behavior during sleep.

Sleep management tips for people with ADHD

Besides medication, there are lifestyle changes and sleep habits individuals can use to help treat and manage the symptoms of ADHD so they can get better sleep.

Tips for children and parents

Children with ADHD are prone to excitability and find it more challenging to relax and go to bed at night, even if they are tired. The following tips may prove useful.

1. Establish a bedtime routine.

Routines generally are especially beneficial for children with ADHD, as the consistency helps them focus on the task at hand. Stick to a regular sleep and wake schedule. Set an alarm or use a timer if it's helpful. Avoid daytime napping.

Children with ADHD may require a full hour to calm down before bed. You may use a timer to piece out different elements of the routine:

- The first half hour can be dedicated to pre-bedtime activity like a bath or brushing their teeth.
- The next fifteen minutes can be a relaxing activity like reading a book together.
- Finally, the last fifteen minutes should be spent in the bed and revolve around a ritual you repeat each night, whether it's saying I love you, talking about a few nice things from the day, reading their book, or rubbing your child's back.

2. Use a reward system.

Once you have a set bedtime routine, you can set different rewards for your child to earn upon completing various steps. For example, your child may earn a star for every day they get into bed on time, or they can earn ten extra minutes of playtime for going to bed in a calm manner. However, it is important to not lecture or scold your child for times when they cannot complete the routine on time. Remind them that they will have a chance to earn the reward the next time.

3. Make the bedroom a relaxing environment.

Turn off electronics and reduce visual distractions. Reserve the bedroom strictly for sleep so their brain associates it with falling asleep. Avoid doing homework or watching television in the bedroom. Encourage other siblings and relatives in the house to be quiet after a certain time. Set the temperature to somewhere in the mid-60 degrees Fahrenheit. Keeping the bedroom cool will calm your child as well, as long as they are properly clothed to be comfortable. Avoid noisy materials in the sheets or pajamas, like frills, ruffles, or sequins.

4. Wake your child up in a soothing manner.

Children with ADHD are more prone to temper tantrums or irritability if they're woken up harshly via a traditional alarm. Instead, try a gradual alarm that slowly gets louder and uses a pleasant song rather than a harsh beep, or open the blinds before gently rousing your child.

5. Exercise on a daily basis.

Exercise helps children release excess energy and also helps the body fall asleep. To avoid it keeping them up at night, schedule exercise in the morning to help them wake up or stop energizing physical activities at least 3 hours before bedtime.

6. Avoid stimulants in your child's diet.

Some foods are better for sleep than others. While it's unlikely that your child indulges in coffee, stimulants can still be found in many carbonated beverages and even chocolate, which contains caffeine. Don't encourage eating 2-3 hours before bedtime.

7. Minimize irritations and unpredictable situations in other areas of your child's life.

While it's not always in your control, avoiding difficult situations whenever possible can prevent your child from acting out or feeling frustrated before bed. Try to avoid long lines or overly stimulating environments that can encourage hyperactivity and irritability. By keeping your child's life as calm and predictable as possible, it will help manage their symptoms on a daily basis and make it easier for them to relax and fall asleep at night.

8. Help your child organize their homework.

As your child ages into his or her teens, they may have more difficulty organizing their homework assignments. This can result in delayed sleep and nighttime anxiety. Helping your teenager organize their homework and prioritize tasks can help ensure they go to sleep at a timely hour.

[Tips for adults](#)

1. Establish a bedtime routine.

Routines generally are especially beneficial for individuals with ADHD, as the consistency helps you focus on the task at hand. Stick to a regular sleep and wake schedule. Set an alarm or use a timer if it's helpful. Avoid daytime napping.

2. Make your bedroom a relaxing environment.

Turn off electronics and reduce visual distractions. Set the temperature to somewhere in the mid-60 degrees Fahrenheit. Reserve the bedroom strictly for sex and sleep so your brain associates it with falling asleep. Avoid doing work or watching television in your bedroom.

3. Exercise on a daily basis.

Exercise releases excess energy and also helps the body fall asleep. To avoid it keeping you up at night, exercise in the morning to help you wake up or stop at least 3 hours before your bedtime.

4. Adjust your eating habits.

Some foods are better for sleep than others. Aim to avoid stimulants in your diet, including caffeine (present in coffee and dark chocolate), alcohol, and nicotine. Don't eat later than a few hours before bedtime.

Sleep products for ADHD

In addition to therapy, medication, and lifestyle changes, there are a variety of sleep products and assistive bedding devices designed to help people with ADHD achieve a better night's sleep.

[White noise machines](#)

White noise machines produce a steady, static sound designed to calm the sleeper and minimize the noise from other items in the room that may be distracting (electronics beeping, fans whirring, clocks ticking).

On the other hand, some people with ADHD may find it more helpful to sleep in total silence, in which case earplugs may be useful.

Individuals with ADHD are more likely to snore. These individuals can find relief from anti-snoring mouthpieces, which fit between the teeth. Additionally, there are chinstraps, pillows, and nasal plugs all designed to alleviate snoring.

If the snoring is more severe and has developed in full-on sleep apnea, continuous positive air pressure (CPAP) machines are a more effective option. Individuals wear a mask over their face that is connected to the machine and provides a steady airflow during the night.

Mattresses

Adjustable airbeds, where one side of the bed can be adjusted to a different height than the other, may prove helpful for couples. The individual with ADHD can slightly elevate their side to open up their throat and reduce snoring, so the other person can sleep better. Compare airbeds by customer rating, brand, availability, pricing and more in Tuck's mattress comparison tool. Children with ADHD are more prone to bedwetting. Waterproof mattresses are constructed of materials built to handle regular incontinence. They're easily cleanable and don't develop odors or stains with regular maintenance. Waterproof mattress covers, duvets, and pillowcases are also available.

Additional resources

Advocacy organizations for ADHD

- CHADD (short for Children and Adults with Attention-Deficit/Hyperactivity Disorder) provides comprehensive resources for adults with ADHD and parents of children with ADHD, including an extensive medication management guide. In addition to online resources and training, CHADD also offers a directory of support groups and ADHD professionals. Their advocacy focuses on helping teachers recognize ADHD in children and learn educational techniques to help them succeed better in school.
- Co-sponsored by CHADD and the CDC, the National Resource Center on ADHD links individuals with ADHD and their caregivers to professional resources, and includes a call center (800-233-4050) available during weekday afternoons and staffed by ADHD information specialists.
- ADDitude Magazine is a print and digital publication dedicated to providing information to individuals with ADHD, their caregivers, and doctors on the latest treatments, management techniques and more. The site includes an online forum where individuals can ask questions and receive help from a supportive community.
- The Attention Deficit Disorder Association (ADDA) connects individuals through virtual support groups and workshops. Besides providing resources online, the organization also runs ambassador awareness programs for educating workplaces and the community about the unique needs of individuals living with ADHD.

Online forums for ADHD

- The ADHD subreddit is an online forum where individuals with ADHD and parents of children with ADHD can lean on each other for support, and share articles and advice.
- ADDConnect is an online support group and discussion community for individuals and parents of children with ADHD, supported by ADDitude Magazine.

- ADDForums is an online forum dedicated to ADD and ADHD with over 100,000 members who support and share their experiences with each other, seek out advice, and provide tips.

Sleep resources for ADHD

- Tuck's Sleep Products for Individuals with Disabilities includes a section focused on assistive bedding devices and sleep management tips for individuals with intellectual disabilities such as ADHD.
- Learn more about ADHD-related sleep disorders from Tuck:
 - Restless Legs Syndrome
 - Sleep Apnea
 - Insomnia
 - Delayed sleep-phase disorder
 - Sleep medicine
- The Restless Legs Syndrome Foundation provides resources about managing symptoms of RLS. The website also offers a provider and support groups directory.

Additional resources for ADHD

- The Centers for Disease Control and Prevention shares resources for diagnosis as well as treatment of ADHD. Additionally, the government agency publishes statistical trends and analysis of diagnoses, demographics, and more.
- The National Institute of Mental Health resource section for ADHD is run by the U.S. Department of Health and Human Services and gives a helpful overview of the disorder.
- The Center for Patient Information and Resources, run by the Department of Education, shares information for parents of children with special needs and includes a directory of local parent centers that give referrals to therapists, school services, and state policies.
- The National Association of Professional Organizers can connect individuals with inattentive-based ADHD find an organizer.
- Drugs.com provides detailed information on over 24,000 prescription drugs, over-the-counter medications, and natural supplements. Individuals with ADHD and parents of children with ADHD can find information about recommended treatment for ADHD symptoms here, including possible side effects, and comparable medications and costs. There is also a community forum where individuals can ask questions of other users and share their own experiences with the drugs.