

Table of Contents

An Overview of Adolescent Sleep Health	Page 2
Myths About Sleep Health	Page 6
Practices for Better Sleep	Page 10
Technology and Sleep Health	Page 14
For More Information	Page 16
Local Resources for Sleep Health	Page 18
Sleep-Related Definitions	Page 20



Adolescent Sleep Health: An Overview

Adolescence refers to young people roughly ages 10 to 19, and is characterized by the onset of puberty. This age group contains youth at a variety of different stages in physical, mental, and emotional development. Adolescence is a time of change for young people, and not all changes begin at the same time or progress at the same rate. According to the National Institutes of Health, puberty typically begins between the ages of 10 and 14 for girls, and between 12 and 16 for boys. Puberty affects many aspects of a young person's health, including their sleep health.

How Much Sleep Adolescents Need:

In adolescence, many aspects of a young person's life changes. School-work becomes tougher and requires more homework; more teens become involved in extracurricular activities and have greater time commitments, and social pressures and the influence of peers becomes greater. These reasons are contributing to sleep loss of epidemic proportions among adolescents.

According to the American Academy of Pediatrics, 59% of middle school students, and 87% of high school students are sleeping less than is recommended. Just as adolescents have greater nutritional requirements than adults, they also need more sleep. Most adolescents need around 8 to 10 hours of restful sleep each night. Some individuals may need more or less to feel alert and rested, and that amount may change as adolescence progresses.

Physiological Changes in Adolescent Sleep Health:

The adolescent body undergoes many physical and mental changes and one of those changes occurs in their physiology of sleep. A shift in hormones causes adolescents to experience a phase delay, or a delay in their natural sleep-wake cycle, which causes them to be unable to fall asleep until later in the evening and unable to fully wake until later in the morning. The typical phase delay for adolescents is approximately two hours. This delay is measurable by the amount of melatonin, the chemical that induces sleep, that is naturally present in the body at certain times of the day. Compounding these physiological changes in the way adolescents sleep with changes in lifestyle and increased social pressures, time commitments, and responsibility, and the early start time of schools creates a circumstance in which it may be very difficult for adolescents to get adequate sleep.

Effects of Sleep Deprivation and Deficiency:

Sleeping too little results in sleep deprivation. Consistently getting inadequate sleep results in sleep deficiency. Sleep deprivation may cause daytime drowsiness, the inability to stabilize emotions and mood, and the inability to focus or perform well. Some memory loss or the inability to retain new memories may occur as well.

Effects of sleep deficiency include all of those of sleep deprivation as well as more critical health effects. Sleep deficiency can affect the physical and mental health of an individual. Consistent inadequate sleep can negatively affect the heart and cardiovascular system, the brain, and other body functions. Sleep is a time of decreased stress on the body, and while some body functions may be more active in sleep, others need the time to rest.

Too little sleep or interrupted, disturbed sleep can also affect mental health since sleep is needed to stabilize emotions and mood. Due to hormonal changes and fluctuations, adolescents may have difficulty stabilizing their emotions and mood even with adequate sleep. Without enough sleep, adolescents may experience extreme emotional and mood swings. They may become depressed, anxious, angry and aggressive, and may develop feelings of hopelessness. Sleep deficient adolescents may experience social difficulty and may have trouble getting along with other students.

Sleep deficient adolescents are at a much higher risk for accidents and injury. The National Highway Traffic Safety Administration estimates that 100,000 car accidents each year are caused by driver fatigue. Sleep deprivation and deficiency can make it difficult to focus and remain alert. Adolescents getting inadequate sleep may also perform poorly in school. Sleep is essential for the brain to build new pathways and to learn new tasks. Studies show that individuals getting adequate sleep before and after learning a new task show significantly better memory and performance.

How to Improve Sleep Health in Adolescents:

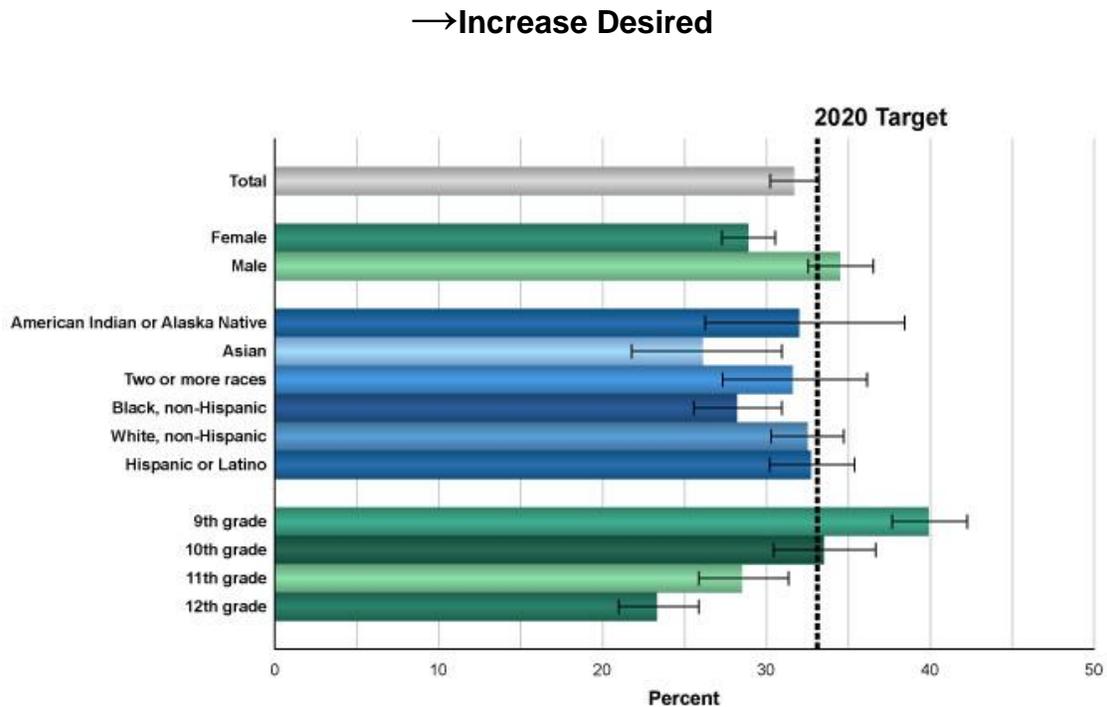
Adolescents and families need to be made aware of sleep as a health topic and need tools to work toward better sleep health. By educating students and families on the importance and seriousness of sleep deficiency, they may begin to think about their sleep health and sleep habits. Studies have shown a significant positive relationship between sleep health education and overall sleep health. Students and families need to be made aware of what may influence sleep health. Parents may not know that allowing their child to have a cell phone in bed may be keeping them from sleeping. Adolescents may not be aware that eating right before bed may make it difficult to sleep.

It is important to empower adolescents and families to take control of their own health. Encourage open communication and working together to make changes to sleep health habits and routines. Promote small changes and steady growth. Meet the student and family where they are at and take into account their unique life circumstances. Included in this toolkit is information and tips for improving sleep health. Use the information in this toolkit to educate students and

families and to make sleep health an important topic in overall physical and mental health.

Graphical Data from Healthy People 2020

Sufficient sleep, adolescents, 2013



SOURCE: Youth Risk Behavior Surveillance System (YRBSS), CDC/NCCDPHP.

— = 95% confidence interval.

In 2013, 31.7% of students in grades 9–12 reported getting sufficient sleep (8 hours or more) on an average school night. This proportion varied by sex, race and ethnicity, and grade. For example:

- 34.5% of male students in grades 9–12 reported getting sufficient sleep on an average school night, compared with 28.9% of female students in grades 9–12.
- 32.7% of Hispanic or Latino students in grades 9–12 reported getting sufficient sleep on an average school night, compared with 28.2% of (non-Hispanic) black students and 26.1% of (non-Hispanic) Asian students.

39.9% of 9th graders reported getting sufficient sleep on an average school night, compared with 28.5% of 11th graders and 23.3% of 12th graders. The proportion of 9th graders who reported getting sufficient sleep was about one and a half times the proportion for 12th graders.



Ten Myths About Sleep

Myth 1: You can make up the sleep that you have lost during the week by sleeping extra on the weekends.

False.

Routinely getting too little sleep creates a "sleep debt." The larger your sleep debt, the more powerful the urge to sleep becomes. However, it is not getting *more* sleep that will resolve your sleep debt, but getting consistent *adequate* sleep. Getting a lot of sleep in one night may help you feel more rested, but it will not correct the physical and mental issues caused by a consistent lack of sleep. In trying to pay back your sleep debt in a single night, you will disturb your sleep-wake cycle and end up losing more sleep. While you cannot make up the sleep you have lost, every night is a new opportunity to begin a routine of adequate rest and to create a balanced sleep account.

Myth 2: Sleep is a time when your body and brain shut down for rest and relaxation.

False.

No evidence shows that any major organ (including the brain) or regulatory system in the body shuts down during sleep. Some physiological processes actually become more active while you sleep. For example, secretion of certain hormones is boosted, and activity of the pathways in the brain linked to learning and memory increases. However, sleep is a time of low stress and overall activity for the body. Since you are not moving around or encountering new environments and stimuli, your body is able to focus its energy on regeneration. Sleep is an essential time of rest for your heart, and the change in sleep hormones from your awake hormones promotes overall physical and mental health.

Myth 3: Even 1 hour less sleep per night than needed will affect your daytime functioning.

True.

This lack of sleep may not make you noticeably sleepy during the day. But even slightly less sleep can affect your ability to think properly and respond quickly, which can put you at higher risk for accident and injury. Lack of sleep can impair

your cardiovascular health and energy balance as well as your body's ability to fight infections, particularly if lack of sleep continues.

Myth 4: Your body adjusts quickly to different sleep schedules.

False.

Your biological clock makes you most alert during the daytime and least alert at night. Thus, even if you work the night shift, you will naturally feel sleepy during the night. Most people can reset their biological clock, but only by appropriately timed cues—and even then, by 1–2 hours per day at best. Consequently, it can take more than a week to adjust to a substantial change in your sleep–wake cycle for example, when traveling across several time zones or switching from working the day shift to the night shift.

Myth 5: Simply sleeping more may not cure you of daytime sleepiness.

True.

Not only is the quantity of sleep important, but also the quality of sleep. Some people sleep 8 or 9 hours a night but don't feel well rested when they wake up because the quality of their sleep is poor. Poor sleep can be caused by many factors including your sleep habits. A number of sleep disorders and other medical conditions affect the quality of sleep. Only committing more time to sleep won't lessen the daytime sleepiness these disorders or conditions cause. However, many of these disorders or conditions can be treated effectively with changes in behavior or with medical therapies. Additionally, one night of increased sleep may not correct multiple nights of inadequate sleep.

Myth 6: Naps are bad for your overall sleep health.

False.

Although naps are no substitute for a good night's sleep, they can be restorative and help counter some of the effects of not getting enough sleep at night. Naps taken before and after learning new information can actually help you learn quicker. If taken at the correct time for the correct duration, naps can help you stabilize your sleep-wake cycle. Avoid taking naps later than 3 p.m. as late naps can make it harder for you to fall asleep when you go to bed. Also, limit your naps to no longer than 20 minutes, because longer naps will make it harder to wake up and get back into the swing of things. If you take more than one or two planned or unplanned naps during the day, you may have a sleep disorder that should be treated.

Myth 7: Snoring is a normal part of sleep.

False.

Snoring during sleep is common and can be attributed to a variety of causes. However, consistent snoring can be a sign of a more serious problem. Evidence is growing that snoring on a regular basis can make you sleepy during the day and increase your risk for diabetes and heart disease. In addition, some studies link frequent snoring to problem behavior and poorer school achievement in children. Loud, frequent snoring can be a sign of sleep apnea, a serious sleep disorder, and should be medically evaluated. Snoring is less common in children and adolescents.

Myth 8: Children who don't get enough sleep at night may not show any typical signs of sleepiness during the day.

True.

Unlike adults, children who don't get enough sleep at night may become hyperactive, irritable, and inattentive during the day. They may also have increased risk of injury and more behavior problems, and their growth rate may be impaired. Sleep debt appears to be quite common during childhood and may be misdiagnosed as attention-deficit hyperactivity disorder.

Myth 9: Everyone needs the same 8 hours of sleep each night.

False.

Adolescents need between 8 and 10 hours of sleep every night. Younger children need more sleep, and all adults, once puberty has ended, need between 7 and 9 hours of sleep each night. Some adolescents will only need 9 hours and others will need at least 10 hours to fulfill their health needs. Less than 5% of all people can sleep less than the recommended amount without any adverse physical or mental effects.

Myth 10: The main cause of insomnia is worry.

False.

Although worry or stress can cause a short bout of insomnia, a persistent inability to fall asleep or stay asleep at night can be caused by a number of other factors. Certain medications and sleep disorders can keep you up at night. Other common causes of insomnia are depression, anxiety disorders, and asthma, trauma or other medical conditions with symptoms that tend to be troublesome at night. Some people who have chronic insomnia also appear to be more "revved up" than normal, so it is harder for them to fall asleep.

Information Gathered from: National Institutes of Health (www.nih.gov)



National Institutes
of Health



Bedtime Practices for Good Sleep: Information for Professionals Educating Teens and Families

1. Go to bed at a set time each night and get up at the same time each morning- even on weekends.

Disrupting this schedule may lead to insomnia. "Sleeping in" on weekends also makes it harder to wake up early on Monday morning because it re-sets the sleep cycle for a later awakening.

Encourage teens and families to plan activities around their sleep schedule and to avoid planning activities late in the day specifically so that they can "sleep-in". Suggest that teens get their homework done early in the weekend so that they are not rushing to complete it late on Sunday night.

2. Exercise during the day.

One should try to exercise 20 to 30 minutes a day. Daily exercise often helps people sleep, although a workout soon before bedtime may interfere with sleep. For maximum benefit, try to get exercise about 5 to 6 hours before going to bed.

3. Avoid caffeine, nicotine, and alcohol, especially before bed.

It is a good idea to try and avoid drinks that contain caffeine, which acts as a stimulant and keeps people awake. Sources of caffeine include coffee, chocolate, soft drinks, non-herbal teas, diet drugs, and some pain relievers. Smokers tend to sleep very lightly and often wake up in the early morning due to nicotine withdrawal. Alcohol robs people of deep sleep and REM sleep and keeps them in the lighter stages of sleep.

4. Try relaxing activities before bed.

A warm bath, reading, listening to music, or another relaxing routine can make it easier to fall asleep. It is important to try and train to associate certain restful activities with sleep and make them part of the bedtime ritual.

There are a variety of different relaxation techniques. Encourage teens to find a method for relaxing that suits their own interests. Maybe they would enjoy drawing or writing, listening to different kinds of music, reading books, comics or graphic novels, taking a warm bath, stretching or meditating. Be creative to help teens find a relaxing activity that they will want to include in their nightly routine. Talk with families to encourage relaxation time before bed.

5. Expose yourself to bright light when you wake up.

If possible, wake up with the sun, or use very bright lights in the morning. Sunlight helps the body's internal biological clock reset itself each day. Sleep experts recommend exposure to an hour of morning sunlight for people having problems falling asleep.

6. Don't lie in bed awake.

When one cannot sleep, they should not just lie in bed, they should do something else that is relaxing, like reading, watching television, or listening to music, until they feel tired. The anxiety of being unable to fall asleep can actually contribute to insomnia and can make it more difficult to fall asleep. If you are unable to get out of bed and go to another room, keep something that may help you sleep close by like a puzzle book or music player.

7. Create a sleep environment.

Your sleep environment is the space in which you sleep. It is important to have a space that is conducive to sleeping and is meant only for sleep. Make sure that your bed is comfortable and that there are enough pillows and blankets. The temperature should not be too high or too low and it should be dark. A fan or a white noise machine can help cancel out any noises that might wake you and can help you fall asleep. Try not to do anything else, like work, in your bed. By only sleeping in your bed, you can create an association between your bed and sleep, which can make it easier to fall asleep. Find another space in your home for working. Keep anything that may distract you from sleeping away from your bed, especially personal electronics.

8. Keep electronics out of bed.

Studies show that as many as 34% of young people sleep with their smartphone on the bed. Personal electronic devices can be distracting and can keep you from getting a good night's sleep. Limit usage an hour

before bed since devices stimulate the mind. Keep your personal electronic devices such as your cell phone, tablet, computer, and other devices out of your bed. Put them away, turned off and out of reach. Use an alarm clock instead of your cell phone. If you must leave your devices on while you are sleeping, keep it out of reach on the other side of the room. Parents should talk with their teens about using devices in bed and should limit the amount of time teens have access to these devices before bed and during the time that they sleep.

9. See a doctor if your sleeping problem continues.

If one is having trouble falling asleep night after night, or always feeling tired the next day, then they may have a sleep disorder and should see a physician. A primary care physician may be able to help; if not, one should find a sleep specialist at a major hospital near you. Most sleep disorders can be treated effectively.

Information Gathered from: National Institutes of Health (www.nih.gov)



National Institutes
of Health



Technology and Sleep in Adolescence

Using electronic devices at night-time is detrimental to adolescent sleep health and overall health.

Over 70% of adolescents reported using at least two electronic devices at night-time.

This is correlated with:

- disrupted sleep cycles
- a poorer quality of sleep
- increased sedentary behavior
- caffeine consumption
- daytime drowsiness and fatigue
- lower levels of academic achievement
- obesity
- depression
- elevated blood pressure
- mood swings
- lower grades

Impact of technology

- Brain stimulation
- Body tension
- Distraction
- Artificial light

Technology use before bed **stimulates the brain**, making it harder to sleep. As your brain revs up, its electrical activity increases and neurons start to race--the exact opposite of what should be happening before sleep.

Sending emails or playing video games right before bed causes **the body to tense** and produce more cortisol, a stress hormone.

Teens are **distracted** by writing papers and chatting with friends online during sleep hours. Many teens sleep with their cell phones at their bedside, using it as an alarm clock. Text messages can wake teens up in the middle of the night.

Facebook, Twitter, Instagram, Tumblr and YouTube are not the only distractions that keep kids up later. **The actual light from the electronic devices that teens are exposed to, especially at night, is also making it difficult to sleep.** Many computers, televisions, and smartphones emit short-wavelength light. Artificial,

light exposure during evening hours can disturb the sleep-wake cycle, cause sleep issues, and depressive symptoms.

Ways to Help

- Have a discussion about limiting text usage and get a calling plan that limits usage. Research shows that teens are more likely to self-limit.
- Discussing and planning the use of the cell phone is a better alternative to policing.
- Parents can ask their child to tell friends that he/she will be unreachable during the night. If it is an emergency, friends can call the home line.

Information gathered from: National Institute of Medicine & PBS



For More Information

To learn more about sleep health and adolescents, and for more general information on the topic of sleep health, search these web-based sources. These sources may also contain helpful tools for talking about sleep health with students and families.

Research-based sleep health information:

National Institutes of Health (www.nih.gov)

- National Heart, Lung, and Blood Institute
- “Your Guide to Healthy Sleep” - 60-page overview of sleep health that can be accessed via the Internet and downloaded for free in PDF format.

There are many articles on the facets of sleep health for all age groups. Numerous research articles can also be accessed through the NIH and NHLBI websites for free. Informational visual aids such as infographics and brochures can also be downloaded.

Sleep Foundation (www.sleepfoundation.org)

The Sleep Foundation is a non-profit organization that contributes to the research-based information used by the NIH and is a reliable source for sleep health information. There are many easy-to-read articles on the website and aids to understanding and improving sleep health. The Sleep Foundation published a sample sleep diary that can be downloaded and utilized for free.

American Academy of Pediatrics (www.aap.org)

There are many good articles that can be used to educate families and to help families learn how to talk about sleep health. The website also contains many articles written about research topics in the field of sleep health.

Healthy People 2020 (www.healthypeople.gov)

This government website contains the national public health goals for sleep health and data on sleep health.

Sleep Health Videos:

PBS Frontline: Inside the Teenage Brain

This documentary on adolescent sleep health can be viewed for free on the PBS website: www.pbs.org. It is accompanied by pages of information and research on adolescent sleep health.

National Geographic: Sleepless in America

This documentary explores sleep health and its many complexities for all age groups. The full documentary can be purchased from various sellers, and parts of the documentary can be viewed on the National Geographic website: www.nationalgeographic.com

CNN: Improving Your Health Could Help You Sleep Better

A seven-minute video that discusses the connection between sleep and overall health. This video contains many tips for good sleep practices from professionals. It can viewed for free on the CNN website: www.cnn.com

ABC News: On Call + Sleep Center

This special section of the ABC News website is dedicated to sleep health. There are videos of professionals speaking about various sleep health topics. The topics can be selected and viewed seperately for free on the ABC News website: www.adbnews.go.com

CBS News

There are multiple articles, interviews, and videos on teens and sleep health. "Why U.S. Teens are More Sleep Deprived Than Ever" explores the causes of teen sleep deprivation and touches on the role of personal electronics in sleep deprivation. "Teens Who Don't Get Enough Sleep Suffer Physical and Mental Health Problems" explores the effects of sleep deprivation in teens. Both videos and articles are available on the CBS News website: www.cbsnews.com

News and Media Sites Reporting on Sleep Health:

CBS News (www.cbsnews.com)

Huffington Post (www.huffingtonpost.com)

The New York Times (www.nytimes.com)

CNN News (www.cnn.com)

National Geographic (www.nationalgeographic.com)

BBC News (www.bbc.com)

USA Today (www.usatoday.com)



Local Sleep Health Resources

Children's Hospital Sleep Center

Phone: (513) 636-1077

E-mail: sleep@cchmc.org

Sleep Apnea and Sleep Disorders Clinic:

Held weekly at the Cincinnati Children's Hospital Main Campus and Liberty Campus.

Raouf S. Amin, MD

Pediatric pulmonologist, specializes in sleep disorders in children

Dean W. Beebe, PhD, ABPP

Pediatric Neuropsychologist, specializes in outcome and development of children with brain injuries and neurodevelopmental disorders

Carolyn Burrows, MSN, APRN, CNP, PNP

Pediatric Nurse Practitioner, diagnoses and treats pediatric physical sleep disorders

Joseph Crisalli, MD

Pediatric pulmonologist, diagnoses and treats pediatric physical sleep disorders

Barbara Chini, MD

Pediatric pulmonologist,

Thomas J. Dye, MD

Neurologist, specializes in child neurology and sleep medicine.

Narong Simakajornboon, MD

Pediatric sleep medicine, specializes in diagnosing and treating pediatric physical sleep disorders

Behavioral Sleep Medicine Clinic:

Held weekly at the Cincinnati Children's Hospital Main Campus.

Kelly Byars, PsyD

Pediatric behavioral psychologist, specializes in pediatric sleep disorders

Cincinnati Psychiatric and Psychological Associates Mental Health Practice

Multiple Providers
7495 State Road
Cincinnati, Ohio, 45255
Phone: (513) 231-8000

Independent Pediatric Sleep Health Specialists in Cincinnati:

Anthony J. Suchoski, MD

Diagnoses and treats various physical and behavioral sleep disorders. Accepts patients ages 15 and older for sleep studies. Located at Group Health in Kenwood
8245 Northcreek Dr
Cincinnati, OH 45236
Phone: (513) 246-7008

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Phone: (513) 271-0803

Elizabeth Cottingham, MD

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Cincinnati, Ohio, 45219
Phone: (513) 721-1737 Ext. 0

Velissarios Karacostas, MD

3001 Highland Avenue, Suite A
Cincinnati, OH, 45219

Phone: (513) 961-8484

Samuel Robertson, MD

333 Lafayette (works out of his home)

Cincinnati, OH, 45220

Phone: (513) 519-5864

Search the MindPeace Database of Mental Healthcare Providers on the
MindPeace website: www.mindpeacecincinnati.com



Sleep-related Definitions

Sleep Deprivation:

Not getting enough sleep can cause one to be sleep deprived. Adolescents require 8 to 10 hours of restful sleep each night. Sleeping less than the recommended amount for any reason leads to sleep deprivation. Sleep deprivation can cause drowsiness, mood swings, and the inability to concentrate or perform well.

Sleep Deficiency:

This is a broader term that refers to the amount, type, and quality of sleep one gets regularly. Sleep deficiency occurs if you have one or more of the following:

- You don't get enough sleep (sleep deprivation)
- You sleep at the wrong time of day (that is, you're out of sync with your body's natural clock)
- You don't sleep well or get all of the different types of sleep that your body needs
- You have a sleep disorder that prevents you from getting enough sleep or causes poor quality sleep

Sleep is essential to good health, much like the nutrients we eat, and just as we may become nutrient deficient, we may also become sleep deficient. Effects of sleep deficiency are unstable mood and emotional state and inappropriate behavior, the inability to concentrate or perform well, and poor memory. Sleep deficiency contributes to some chronic physical illnesses and increases the risk for injury. It also contributes to depression and the inability to focus.

Sleep Debt:

This is the amount of total sleep lost. Routinely sleeping less than the recommended number of hours results in a larger sleep debt. This sleep debt cannot be made up. Attempting to make up your sleep debt by sleeping more during the following nights could disturb your sleep-wake cycle and cause more long-term sleep loss.

Sleep Habits:

These are the actions within your control that affect the amount or quality of sleep you get in a night. These may include eating, exercise, napping, smoking and drinking alcohol, and activity on personal electronics before sleeping or in bed.

Sleep Disorders:

These are diagnosable, and often treatable, physical disorders that affect sleep.

Unlike the effects of poor sleep habits, the symptoms of sleep disorders cannot be controlled easily without medical attention. There are many reasons that adolescents develop sleep disorders such as weight gain, trauma, and typical hormonal and physical development. The Cleveland Clinic reports that as many as 30% of adolescents experience disordered sleep.

- Sleep Apnea - Characterized by pauses in an individual's breathing during sleep, sleep apnea can be caused by an increase in fat accumulation, a loss of muscle mass, or by some physical obstruction. An individual with sleep apnea may wake up numerous times throughout the night due to their intermittent inability to breathe. Sleep apnea can be treated with adjustments to the sleeping position, by using a special device to assist with breathing, and with surgery.
- Insomnia - Most people experience short-term insomnia as the result of diet, stress, or other factors at some point in their lives. Long-term insomnia, however, is not the result of sleep habits and cannot typically be controlled with sleep medication or changes in habits. New treatments for long-term insomnia, such as light therapy, are being explored.
- Restless Leg Syndrome (RLS) - Individuals with RLS experience persistent a tingling, prickling, or crawling sensation in their legs and need to move their legs day and night for relief. This constant movement can make it difficult to sleep. RLS can develop at any age and may be treatable.
- Narcolepsy - Characterized by daytime "sleep attacks", individuals with narcolepsy experience unexpected urges to sleep even if they have had adequate sleep the previous night. Individuals with narcolepsy may also have sudden loss of muscle control in emotional situations, hallucinations, and disrupted nighttime sleep. Narcolepsy can be treated and controlled.

Sleep Drive:

The need for sleep is driven by the length of time you are awake. The longer you are awake, the greater your drive or "need" to sleep. The drive to sleep continues to build within your body until you are able to sleep

Circadian Rhythm:

The word "circadian" refers to rhythmic biological cycles that repeat at approximately 24-hour intervals and regulates your sleep. This cycle can be measured by the amount of melatonin, a chemical present in large amounts during sleep, present in the body. Your circadian rhythm is strongly influenced by light, which is the reason that people living in different regions have different

sleeping schedules. Also called “circadian clock”, “biological clock”, and “24 hour sleep-wake cycle”.

Juvenile Phase Delay:

A shift in the natural 24 hour sleep-wake cycle due to adolescent changes in hormones. As children enter adolescence, it is common that they experience a phase delay of two hours causing them to fall asleep later and wake up later in the morning. For example, a child needing 10 hours of sleep may have gone to bed at 9 p.m. and woken up at 7 a.m., a teen needing 10 hours of sleep will fall asleep at 11 p.m. and will need to stay asleep until 9 a.m. This occurs because the adolescent body does not flush with melatonin as early, and does not decrease the amount of melatonin until later in the morning. Large amounts of melatonin present in the body make it difficult for teens to learn in the early morning. There has been a nationwide push to start school later.

Types of Sleep:

There are two main types of sleep, REM and Non-REM sleep, that your body cycles through in stages multiple times each night. You need both types for adequate sleep that rejuvenates the mind and body.

- REM stands for Rapid Eye Movement. This type is characterized by increased blood pressure and blood pressure, irregular and shallow breath, and movement of the eyes beneath the eyelids. Dreaming occurs during this stage.
- Non-REM sleep occurs in three stages. Stage 1 is light sleep, when you're easily awakened. Stage 2 is a deeper sleep where all twitches and movements stop. Stage 3 is deep sleep. Deep sleep is rejuvenating sleep necessary for the brain to build connections like memories and new skills from the day.

Sleep Environment:

Your sleep environment where you sleep and is made up of all the factors that influence your sleep. Your bed, blankets, pillows, the temperature, light and noise levels, and other objects in the room all influence your sleep. Personal electronic devices such as cell phones, tablets, computers, and televisions in the sleep environment can be distracting and may negatively impact your ability to sleep. It is important to try and create a sleep environment used only for sleeping.

Sleep Diary:

A sleep diary is a record of the amount and quality of sleep, as well as the habits that affect sleep. A sleep diary may record when you went to sleep and when you woke, ask you to rate your quality of sleep and report time spent awake, and will ask how rested you feel in the morning at night. A sleep diary will also record when and how much food, caffeine, alcohol were consumed, when you smoked, and when or if you exercised during the day. Any other activity that might influence sleep such as napping, meditation and relaxation, or stress and emotional life events should also be recorded. Sleep diaries are used to track

and improve sleep and sleep habits, and could help you decide to seek treatment for a sleep disorder.

Information Gathered from: National Institutes of Health (www.nih.gov)

