



KEYNOTES AND RESOURCES

Episode 156 – Sleep – Part One: Sleep Disorders

May 8, 2026

Introduction

Sleep is essential for survival and maintaining good health, yet the reasons for its necessity and how it specifically benefits people are not fully understood. One key benefit of sleep is its restorative effect, which helps individuals function normally during the daytime. [1]

Sleep also affects physiological processes, cognitive performance, and mood. Healthy sleep habits are linked to a lower risk of serious health issues, including cardiovascular disease,¹ diabetes,² mental and cognitive disorders, accidents, injuries, and mortality. [2]

Sleep duration,³ quality,⁴ regularity,⁵ and timing⁶ are important aspects of sleep health that are associated with various health outcomes. Research indicates a U-shaped relationship between sleep duration and physical and mental health.⁷ For adults, getting 7 to 8 hours of sleep per night is most closely associated with favourable health outcomes. In contrast, both short and long sleep durations are associated with an increased risk of negative health effects. [2]

Sleep requirements differ significantly among individuals, typically ranging from 6 to 10 hours per day. While most people sleep at night, many others need to sleep during the daytime due to their work schedules, which can lead to sleep disorders. [1]

How long individuals sleep and how rested they feel after waking can be influenced by factors such as:

- Level of excitement or emotional distress.
- Age (e.g., older adults tend to fall asleep earlier, wake earlier, and be less tolerant of changes in sleep habits).
- Diet, including some food ingredients and additives (e.g., caffeine, strong spices, monosodium glutamate [MSG]), may disturb sleep.

¹ Listen to Episodes 37, 79, 80, and 81 for discussion on cardiovascular diseases.

² Refer to Episodes 91, 93, and 94 for additional information on diabetes.

³ Sleep duration is the amount of sleep obtained per night. [38]

⁴ Sleep quality refers to a person's satisfaction with their sleep, including sleep initiation, quantity, maintenance, and feeling refreshed on waking. [39]

⁵ Sleep regularity is the consistency of sleep timing or duration. [38]

⁶ Sleep timing refers to the time during the 24-hour day when someone sleeps. [38]

⁷ Refer to Episode 88 for additional information on mental and oral health.

- Various medications can cause sleepiness or sleep difficulties (e.g., sedatives, alcohol, caffeine, benzodiazepines, beta blockers, etc.).
- Snoring may interfere with sleep for the snorer or the snorer's bed partners. [1] [3] [4]

Sleep physiology

There are two phases of sleep:

- Nonrapid eye movement sleep, which is further divided into three stages (N1 to N3).
- Rapid eye movement sleep. [5]

Each phase and stage of sleep includes changes in muscle tone, brain wave patterns, and eye movements. Factors such as depression, aging, traumatic brain injuries, medications, and circadian rhythm disorders can affect sleep quality and time spent in each stage. [6]

Nonrapid eye movement sleep

Nonrapid eye movement (NREM) sleep has three stages, N1 to N3, which represent increasing depths of sleep. During early stage N1, the lightest stage, slow rolling eye movements are present, but these movements disappear as a person progresses into deeper sleep stages: N2 to N3. Muscle activity also decreases in these deeper stages. Stage N3 is known as deep sleep because the arousal threshold is high, and individuals often perceive this stage as high-quality sleep. In adults, NREM sleep accounts for approximately 75%-80% of total sleep time. Heart rate and body temperature tend to decrease during this phase. [1] [5]

Rapid eye movement sleep

Rapid eye movement (REM) sleep follows each cycle of NREM sleep. During REM sleep, the brain shows unusually high electrical activity, similar to what occurs during wakefulness. The eyes move rapidly, and certain muscles become paralyzed, preventing voluntary movement. However, some muscles may twitch involuntarily. Additionally, the rate and depth of breathing increase during this stage. Normally, 20%-25% of sleep is REM. [1] [5]

Sleep cycle

The circadian rhythm regulates the sleep cycle. Individuals typically cycle through the three stages of NREM sleep (N1 to N3), followed by a brief period of REM sleep every 90 to 120 minutes, cycling through this process about 5 to 6 times a night. Throughout the night, individuals wake briefly, referred to as stage W, but they are usually unaware of being awake.

Relatively little time is spent in stage N1 (shallow) sleep. Most time is spent in stage N2 sleep. Deep sleep (stage N3) occurs mostly during the first half of the night. As the night progresses, more time is spent in REM sleep. The most vivid dreaming occurs during REM sleep. Most sleep talking, night terrors, and sleepwalking occur during stage N3 of NREM sleep. [1] [5] [6]

Sleep requirements

Individual sleep requirements vary widely, ranging from 6 to 10 hours per day. With aging, total sleep time and deep sleep (stage N3) tend to decrease, and sleep becomes more interrupted. In older adults, stage N3 may disappear. These changes may account for increasing excessive daytime sleepiness and fatigue with aging, but their clinical significance is unclear. [5]

Newborns have an immature nervous system, which causes them to sleep a great deal, but usually only for one or two hours at a time, regardless of whether it is day or night. By 4 to 6 weeks of age, many infants begin a cycle of waking for 4 hours and then sleeping for 4 hours. By 4 to 6 months, most infants adopt a day-night sleep schedule. By 1 year of age, most infants can sleep continuously for 8 to 9 hours at night. However, sleep disturbances are common and can occur at various times during the first few years. [7]

Factors influencing sleep patterns differ across age groups. For infants, innate biological rhythms play a crucial role. Sleep disturbances often occur at 9 months and again around 18 months for several reasons, including:

- Separation anxiety develops.
- Increased mobility allows children to explore and control their surroundings.
- Long, late-afternoon naps.
- Overstimulation while playing before bedtime.
- Nightmares tend to become more common. [7] [8]

Partial arousals from sleep are common across all age groups. Parents can help infants sleep at night by handling and stimulating the child less in the late evening and keeping the child's room dark at night, which is important for developing normal vision. Infants should be encouraged at an early age to fall asleep on their own and not in a parent's arms. This approach allows infants to learn to quiet themselves when they wake in the middle of the night.

Infants who are always held, rocked, or driven in a car to help them fall asleep will not learn to fall asleep on their own in their typical sleep environment and may develop problems with frequent night awakenings. These problems can be prevented by placing infants in their crib or bassinet when drowsy but still awake, allowing them to fall asleep on their own. This approach helps infants to learn to calm themselves when they wake up in the middle of the night.

For toddlers and older children, emotional factors and established habits become more important. Stressful events (e.g., moving or an illness) may cause short-term sleep problems in older children. [7] [8]

Teething

Results from a longitudinal study by [Kahn et al. \(2025\)](#) challenged the widely held belief that teething disrupts infant sleep. The study involved 849 infants aged 3 to 18 months from the US and Canada whose sleep was assessed using specialized baby monitors. Parents reported on tooth eruption timing, symptoms, and management strategies. The

children's sleep data for 3 weeks before, and 1 week after, tooth eruption were analyzed.

The baby monitoring system used computer vision algorithms to detect motion and stillness patterns and translated them into sleep-wake metrics. The algorithm also tracked parental visits to the crib.

The study findings revealed no significant differences in total sleep time, nighttime awakenings, or parental crib visits in the nights surrounding an infant's tooth eruption compared with non-teething nights.

The findings also showed a progressive increase in nighttime sleep duration and a decrease in the number of nighttime wakings and parental visits over the 4 weeks analyzed. These developmental trends align with the expected maturation of infant sleep-wake patterns.

More than half of the parents (51%) reported changes in their child's sleep during teething. However, these subjective reports were not supported by objective data. Among these parents, 55% indicated their child slept less, 87% reported more night awakenings, and 39% reported bedtime was more challenging during teething.

To manage teething symptoms, 13% of parents used topical anesthetics, 56% used acetaminophen or ibuprofen, 68% used a frozen teething ring or washcloth, 13% used homeopathic remedies, and 37% used breast or bottle-feeding.

Excessive and prolonged use of analgesics in infants poses risks, including hypersensitivity reactions, gastrointestinal bleeding, and renal impairment. Other common management strategies, such as using amber necklaces or topical anesthetics, can lead to choking, intoxication, and methemoglobinemia. Misattributing sleep disruptions to teething may delay the proper diagnosis and treatment of pediatric insomnia, other sleep-related or non-sleep-related issues. This misunderstanding could prevent parents from using brief, cost-effective behavioural sleep interventions to improve their child's sleep.

These findings challenge the common belief that teething disrupts sleep and emphasize the need for healthcare professionals to consider other explanations for sleep problems in infants. Providing parents with evidence-based information may prevent potentially harmful management strategies for teething, such as excessive use of analgesics and topical anesthetics, and improve the handling of sleep issues. Future research should investigate these relationships using multiple objective measures and diverse populations.⁸ [9]

⁸ Listen to Episodes 115, 116, and 117 for discussion on children and oral health.

Canadian recommendations for sleep [10] [11] [12] [13]

Age	Sleep recommendation
Infants (0-3 months)	14-17 hours
Infants (4-11 months)	12-16 hours of good-quality sleep, including naps
Toddlers (1-2 years)	11-14 hours of good-quality sleep, including naps, with consistent bed and wake times
Preschoolers (3-4 years)	10-13 hours of good-quality sleep, which may include a nap, with consistent bed and wake times
Children (5-13 years)	9-11 hours of sleep per night, with consistent bed and wake times
Youth (14-17 years)	8-10 hours per night, with consistent bed and wake times
Adults (18-64 years)	7-9 hours of good-quality sleep on a regular basis, with consistent bed and wake times
Adults (≥65 years)	7-8 hours of good-quality sleep on a regular basis, with consistent bed and wake times

Canadian children and sleep

Children need adequate nighttime sleep to be healthy. Current guidelines recommend:

- 9-11 hours of sleep/night for children ages 5-13 years old, and
- 8-10 hours of sleep/night for children 14-17 years old. [14]

However, 1 in 4 Canadian children are not getting enough sleep, with:

- 1 in 3 children having trouble going to sleep or staying asleep.
- 1 in 5 children having difficulty staying awake during waking hours.
- 1 in 10 children do not find their sleep refreshing. [14]

Over time, insufficient sleep impacts how children feel, behave, and interact. For example:

- 17% of children who get insufficient sleep report hyperactivity compared to ~12% of children who get adequate sleep.
- 21.5% of children who get insufficient sleep report stress compared to 10% of children who get adequate sleep.
- 11% of children who get insufficient sleep report poor mental health compared to 4.5% of children who get adequate sleep. [14]

Getting more sleep can help with children's:

- Physical health,
- Emotional well-being, and
- Quality of life. [14]

Canadian adults and sleep

Current guidelines recommend:

- 7-9 hours of sleep/night for ages 18-64, and
- 7-8 hours of sleep/night for ages ≥65. [15]

However, in Canada:

- 1 in 4 adults aged 18-34,
- 1 in 3 adults aged 35-64, and
- 1 in 4 adults aged 65-79 are not getting sufficient sleep. [15]

Several factors associated with insufficient sleep among adults include:

- More sedentary time: Adults who get insufficient sleep report an average of 4 hours of sedentary time a day compared to an average of 3.5 hours for adults who get adequate sleep.
- Chronic stress: 36% of adults who get insufficient sleep report having chronic stress compared to 23% of adults who get adequate sleep.
- Poor mental health: 2% of adults who get insufficient sleep report having poor mental health compared to ~6% of adults who get adequate sleep. [15]

Good sleep habits, which include sufficient sleep duration, quality, and consistency, are associated with positive health benefits in both the short and long term. [2]

Sleep hygiene

Sleep hygiene focuses on behavioural changes to help improve sleep. These changes include limiting the time spent in bed, establishing a consistent sleep-wake schedule, and engaging in relaxing activities before bedtime (e.g., reading, taking a warm bath). Improving sleep hygiene can lead to better sleep. [4]

Sleep hygiene [5] [16] [17] [18] [19] [20]

Strategy	Implementation
Regular sleep-wake schedule	Bedtime and especially wake time should be the same time each day, even on weekends and vacations. Plan to sleep seven to nine hours every night. Go to bed only when sleepy. If having trouble sleeping at night, do not make up for it with naps or sleeping in. Avoid spending excessive time in bed.
Regular routine before bedtime	A regular pattern of activities, such as brushing and flossing teeth, face washing, listening to soft music, and setting the alarm clock, can set the mood for sleep. This routine should be followed every night, at home or away, even on weekends.
Bright light exposure during daytime	Exposure to light during daytime (sunlight or artificial) can help people readjust their sleep-wake schedule to sync with the earth's cycle of light and dark (circadian rhythm).
Avoid bright light and blue light at night	Light exposure too close to bedtime can interfere with sleep. Avoid bright light and blue light (e.g., from phones, TVs, computer screens) before bedtime and during nocturnal awakenings. Avoid unwanted lights by keeping clocks out of view and phones facing down. Exposure to light suppresses the secretion of melatonin, a hormone that influences circadian rhythms. While any light can suppress melatonin secretion, blue light at night does so more.

Strategy	Implementation
Sleep conducive environment	The bedroom should be dark, quiet, well-ventilated, and reasonably cool. Loud noises can disturb sleep even when people are not awakened by them. Heavy curtains or a sleep mask can eliminate light. Earplugs, fans, or white-noise devices can help eliminate disturbing noise. Put the phone on silent (or out of the room entirely) to help keep the room quiet. If awoken during the night, avoid bright lights.
Pillows	Pillows between the knees or under the waist can increase comfort for some. For people with back problems, helpful positions include lying supine with a large pillow under the knees or sleeping on one side with a pillow between the knees.
Bed for sleeping	The bed should be used for sleep and intimacy. It should not be used for eating, reading, watching TV, paying bills, texting or emailing on a phone or laptop, or other activities associated with being awake.
Limiting time in bed	Limiting time in bed improves sleep continuity. If unable to fall sleep within 20 minutes, get out of bed, do something else in another room, and return when sleepy. This may be more effective than lying in bed and trying harder to fall asleep.
Regular exercise	Exercise promotes sleep and reduces stress. However, exercise within 5 hours of bedtime can stimulate the nervous system and interfere with falling asleep.
Relaxation	Stress and worry interfere with sleep. Reading or taking a warm bath before bedtime can aid relaxation. Relaxation techniques, such as visual imagery, progressive muscle relaxation, meditation, and breathing exercises, can be helpful. Aim to leave problems at the bedroom door. Scheduling a time during the day to think about concerns can diminish the need to worry at bedtime.
Avoid stimulating activity before bedtime	Watching exciting TV shows or sports events, playing thrilling computer games, or dealing with complicated work-related matters an hour or so before bedtime can make sleeping difficult.
Avoid substances that interfere with sleep	Beverages and food that contain caffeine (e.g., coffee, tea, soft drinks, energy drinks, chocolate) can interfere with sleep. Caffeinated substances should not be consumed within 12 hours of bedtime. Various medications and substances, such as appetite suppressants, diuretics, alcohol, and nicotine (e.g., in tobacco and vaping products, nicotine pouches ⁹ and patches) can interfere with sleep. Drinking a large amount of alcohol in the evening can cause early morning awakenings. Drinking alcohol, using tobacco or nicotine products, and taking appetite suppressants or diuretics should be avoided near bedtime. Tobacco and vaping cessation may help improve sleep. ¹⁰
Eat a light snack	Hunger can interfere with going to sleep. Occasionally, eating a light snack, especially if warm, can help, unless a person has gastroesophageal reflux. However, aim to stop eating at least a few hours before bedtime, especially heavy meals. Heavy meals may cause acid reflux, which can interfere with sleep.
Less fluid at night	Drink less fluid in the evening, do not drink anything before bedtime, and use the toilet just before bed to help avoid waking to go to the toilet.
Eliminate behaviours that provoke anxiety	Avoid watching the clock while in bed. Turn the clock away so that time is not a focus.

⁹ Refer to Episode 131 for additional information on nicotine pouches.

¹⁰ Refer to Episode 101 for additional information on tobacco use and cessation.

Strategy	Implementation
Avoid daytime naps, except for shift workers and people with narcolepsy	Daytime naps may aggravate sleeplessness in those with insomnia. However, naps reduce the need for stimulants in those with narcolepsy and improve performance in shift workers. If needed, naps should be taken at the same time each day and limited to 30 minutes.

Climate change

Climate change is elevating nighttime and daytime temperatures globally. The intensity of nighttime warming is projected to continue to exceed daytime warming in most populated areas. Urbanization will likely further exacerbate nighttime heat exposure for most populations.

There is growing evidence that climate change is associated with higher health risks, particularly heat-related illnesses and fatalities. Elevated temperatures and extreme heat are associated with increased injuries, hospitalizations, mental health issues, healthcare costs, and decreased cognitive performance and labour productivity.

One possible explanation for the association between ambient temperature and health outcomes is sleep disruption. Shorter sleep duration, poor sleep quality, and sleep disorders, such as insomnia and sleep apnea, are associated with an increased risk of cardiovascular and metabolic diseases, cancer, mental health disorders, and accidents.

Hot outdoor and indoor temperatures are associated with short and disrupted sleep, with higher temperatures linked to progressively worse sleep outcomes. The negative effect of heat persists across various sleep measures and is stronger during the hottest months and days, in vulnerable populations, and in the warmest regions. Evidence from multiple geographic areas indicates that temperature increases are associated with greater sleep deficits for older adults, those living in lower socioeconomic conditions, and those already residing in hotter climate regions.

Because there is limited evidence that human sleep adapts to rising temperatures, climate change and urbanization likely pose a growing threat to sleep quantity and quality, with downstream impacts on health, performance, and wellbeing without climate control and adaptation. [21] [22]

Aging¹¹

Issues with sleep health are especially relevant for middle-aged and older adults, as aging often leads to difficulties in both initiating and maintaining sleep. Multimorbidity in this group may increase the likelihood of sleep problems and their adverse health effects. Insufficient sleep can also pose significant risks to middle-aged and older adults, including cognitive decline and a higher risk of falls. Notably, for middle-aged individuals, poor sleep during midlife can contribute to greater cognitive decline in later years. [23]

¹¹ Refer to Episodes 123 and 124 for additional information on aging.

As people age, total sleep time and deep sleep generally decrease, and sleep becomes more prone to interruptions. While many causes of poor sleep can be similar to those in younger adults, age-related changes can also contribute to sleep issues. In addition, certain health conditions, medications, and napping can interfere with sleep. [1]

Age-related changes

- As people age, they often do fewer activities and are less physically active, making falling asleep and staying asleep harder.
- Moving into a relative's home or a care facility can reduce control over temperature, noise, and other sleep-related conditions, making sleep difficult.
- Spending less time outdoors reduces sunlight exposure, which can disrupt the body's internal clock and make nighttime sleep more difficult.
- Aging reduces production of melatonin and growth hormone, both of which support deep, restorative sleep. Melatonin is a hormone that helps promote sleep and regulates the sleep-wake cycle.
- Older adults tend to fall asleep earlier, wake earlier, and spend less time in deep sleep compared with younger individuals. They wake more frequently during the night and may feel less refreshed even after spending many hours in bed. These changes may indicate a sleep disorder if they interfere with daytime functioning.
- Older adults are less tolerant of changes in sleep routines and are more affected by jet lag and shift-work schedules. [1]

Health conditions affecting sleep

Older adults are more likely to have health conditions that can disrupt sleep, including:

- Painful conditions (e.g., arthritis).
- Breathing difficulties (e.g., heart or lung disorders, obstructive sleep apnea).
- Conditions increasing urination frequency, leading to frequent awakenings (e.g., benign prostatic hyperplasia, diabetes, heart failure).
- Depression, which is common among older adults. [1]

Medications

Older adults often take medications that can affect their sleep. Some medications (e.g., diuretics) increase the need to urinate, which can interrupt sleep. Other medications may cause daytime drowsiness or increased stimulation, making it more difficult to sleep at night. [1]

Sleep aids, known as hypnotics, can be prescribed or purchased over the counter. Even in small doses, these medications can have side effects, especially in older adults. Common side effects include daytime drowsiness, clumsiness, nervousness, agitation, difficulty urinating, and confusion. Additionally, these medications can increase the risk of nighttime falls. [1]

Napping

Older adults often take naps because they may not sleep well at night. While daytime napping can help compensate for poor nighttime sleep, it can also make it more difficult to sleep at night. [1]

Research by Gao et al. (2026) indicates that as people age, napping may serve as an easily trackable warning sign of underlying health conditions or declining health. The study followed 1,338 adults aged 56 and older for up to 19 years to examine their napping habits and associated mortality rates.

Beginning in 2005, participants wore wrist activity monitors for 10 days to collect data on their rest-activity patterns. The research team analyzed this data to identify sleep patterns, including nap length, frequency, timing during the day, and variability from day to day.

By 2025, 19 years' worth of data had been collected. They analyzed the data for associations between napping patterns at the initial assessment and all-cause mortality during the 19-year follow-up. The finding revealed that longer, more frequent, and morning naps were all associated with higher mortality.

Specifically, each additional hour of daytime napping per day was associated with approximately a 13% higher mortality risk; each extra nap per day was associated with approximately a 7% higher mortality risk; and morning nappers had a 30% higher mortality risk compared to afternoon nappers. However, irregular napping patterns were not associated with any increased mortality risk.

It is important to note these findings reflect correlation, not causation. Excessive napping likely indicates underlying diseases, chronic conditions, sleep disorders, or circadian rhythm dysregulation. The results suggest incorporating assessments of daytime napping through wearable devices into clinical and public health practices could offer new opportunities for early identification of health risks. [24]

Measures to improve sleep

Older adults generally need as much sleep as they did when they were young, and they should not accept poor sleep as part of aging. Measures to improve their sleep hygiene include:

- Stay active but avoid exercise and stimulating activities late in the evening.
- Spend time outdoors to benefit from natural light.
- Avoid foods and beverages that can disrupt sleep (e.g., those containing caffeine or alcohol) or limit caffeine to the early part of the day.
- Ensure the bedroom is conducive to sleep (e.g., cool and dark).
- Go to bed and, more importantly, wake up at consistent times each day. [1]

Sleep disorders

Sleep disorders involve disturbances in the ability to fall asleep, stay asleep, or stay awake. They also include unusual behaviours during sleep, such as sleepwalking. Sleep can be disturbed by many factors, including irregular bedtimes, activities before bed, stress, diet,¹² other health disorders, and various medications. [1]

¹² Refer to Episodes 144, 145, and 146 for additional information on nutrition.

Problems with sleep health can affect daily functioning, mental health, overall well-being, quality of life, and cognitive abilities. They are associated with an increased risk of serious health issues, such as obesity,¹³ diabetes, hypertension,¹⁴ cardiovascular disease, multimorbidity, and mortality. Sleep issues have societal and economic consequences, resulting in an estimated loss of productivity of approximately \$21 billion each year in Canada. [23]

Symptoms of sleep disorders

Symptoms of common sleep disorders may include:

- Difficulty falling asleep.
- Lying awake for long periods at night.
- Waking up several times during the night.
- Waking up too early and being unable to fall back to sleep.
- Snoring, gasping, choking, or episodes in which breathing stops during sleep.
- Feeling an urge to move while trying to fall asleep.
- Moving arms and legs too much during sleep.
- Sleep bruxism.
- Unusual activities during sleep (e.g., sleepwalking).
- Daytime sleepiness.
- Feeling down, irritable, or having a lower mood.
- Difficulty concentrating.
- Falling asleep at unusual times (e.g., while driving or working). [25] [26]

Risk factors

Factors that can raise the risk of sleep disorders include:

- Age: Sleep varies depending on age, and age may play a role in sleep disorders.
- Genetics: Having sleep disorders (e.g., insomnia, restless leg syndrome, sleepwalking, sleep apnea) may be more common if a family member also experiences them.
- Medical conditions: Neurological conditions, such as Parkinson's disease, multiple sclerosis, and traumatic brain injury, may raise the risk of sleep disorders. Cardiovascular disease, lung disease, cancer, diabetes, and chronic pain are associated with insomnia. Being overweight increases the risk of obstructive sleep apnea. Heart failure and atrial fibrillation raise the risk of central sleep apnea.
- Mental health conditions: Stress, depression, anxiety, and other mental health conditions may affect sleep.
- Schedule changes: Jet lag or shift work can alter the sleep-wake cycle and disrupt sleep.
- Medications: Certain medications, caffeine, alcohol, and unregulated drugs can affect sleep. [26]

¹³ Refer to Episodes 120, 121, 122 for additional information on obesity.

¹⁴ Listen to Episodes 135 and 136 for discussion on hypertension.

Types of sleep disorders

Sleep disorders (sleep-wake disorders) involve problems with the quality, timing, and amount of sleep, which result in daytime distress and impairment in functioning. Sleep disorders often occur along with medical conditions or other mental health conditions, such as depression, anxiety, or cognitive disorders. There are several different types of sleep disorders, of which insomnia is the most common. Other sleep disorders include parasomnias, circadian rhythm sleep disorders, narcolepsy, restless leg syndrome, periodic limb movement disorder, and obstructive sleep apnea. [27]

Insomnia and excessive daytime sleepiness

The most common symptoms of sleep disorders are:

- Insomnia, and
- Excessive daytime sleepiness. [1]

Insomnia

Insomnia is difficulty falling or staying asleep, early awakening, or a disturbance in sleep quality that makes sleep seem inadequate or unrefreshing. Insomnia can be a disorder or a symptom of another disorder. Individuals with insomnia have difficulty falling and staying asleep and usually wake up feeling unrefreshed. They may wake up early. As a result of insufficient sleep, they may feel sleepy, fatigued, and irritable during the day. A regular sleep schedule or improving sleep hygiene may correct mild insomnia. Long-term insomnia increases the risk for other health problems. [1] [4] [5] [28]

Insomnia is most often caused by:

- Inadequate sleep hygiene, such as consuming caffeine in late afternoon or evening, exercising late at night, watching an exciting TV show before bed, or having an irregular sleep-wake schedule.
- Daytime napping.
- Mental health disorders, particularly depression, anxiety, and substance use disorders.¹⁵
- Various medical conditions, such as heart, lung, and musculoskeletal disorders.
- Chronic pain from health problems or injuries.
- Use of certain medicines or unregulated drugs.
- An insomnia disorder, including:
 - Adjustment insomnia caused by acute stress (e.g., due to hospitalization, job loss, or death in the family.)
 - Psychophysiologic insomnia from excessive worrying about sleeplessness and daytime fatigue. [3] [4] [5] [28]

Excessive daytime sleepiness

Excessive daytime sleepiness refers to being unusually sleepy or falling asleep during the day. Excessive daytime sleepiness is not a disorder but a symptom of various sleep-related disorders. Individuals with excessive daytime sleepiness tend to fall asleep during normal waking hours. Some sleep disorders make people unable to resist falling asleep during the day. They may fall asleep while at work, school, or while driving.

¹⁵ Listen to Episodes 104 and 105 for information on substance use.

People with excessive daytime sleepiness may be irritable or trouble concentrating. [1] [4] [5] [28]

Excessive daytime sleepiness is most often caused by:

- Insomnia (from any cause) tends to cause daytime sleepiness.
- Poor sleep habits (e.g., frequently staying up too late).
- Insufficient sleep syndrome, where individuals do not sleep enough at night, leading to sleep deprivation.
- Obstructive sleep apnea, in which breathing frequently stops during sleep.
- Other sleep disorders, such as narcolepsy or restless legs syndrome.
- Various conditions such as encephalitis, meningitis, or brain tumours.
- Circadian rhythm disorders (e.g., jet lag, shift work disorder). [3] [4] [5] [28]

Parasomnias

Parasomnias are unusual movements and behaviours that occur just before falling asleep, during sleep, or upon waking. Almost everyone experiences brief, involuntary jerks of the arms, legs, or entire body when they are just about to fall asleep. However, some people experience sleep paralysis (being unable to move despite wanting to), or they may have brief, fleeting images or thoughts during the transition into sleep or awakening.

Individuals may clench or grind their teeth or experience nightmares. Sleepwalking, head banging, and night terrors are more common in children, who typically do not remember these episodes. Other types of parasomnias include night terrors, rapid eye movement sleep behaviour disorder, and sleep-related leg cramps. [29] [30]

Night terrors

During night (sleep) terrors, individuals suddenly scream, flail, and appear to be frightened. Their eyes are wide open, their heart races, they may sit up, and they are difficult to awaken. Night terrors differ from nightmares and may lead to sleepwalking.

Night terrors are more common in children, particularly between the ages of 3 and 8. Children should not be awakened because doing so makes them even more frightened. Although children appear very distressed, they have no memory of the events or mental images after awakening and do not have psychological problems because of these behaviours. Parents need not be overly concerned, as children typically stop having episodes when they become older.

Night terrors usually occur when individuals are partially aroused or have just awakened from N3 sleep, the deepest stage of NREM sleep, typically during the first few hours of the night. Thus, they do not represent nightmares. In adults, night terrors are often associated with psychological problems or alcohol use disorder.

For children, parental reassurance may be all that is needed. If schoolwork or other activities are affected, treating older children with certain intermediate- or long-acting oral benzodiazepines (e.g., diazepam, clonazepam, or alprazolam) at bedtime may help. These medications, which are used to treat anxiety (anxiolytic medications) and

induce sleep (sedatives), are administered 90 minutes before bedtime. They can help children sleep and reduce the likelihood of night terrors. However, these medications have significant adverse effects, as long-term use of benzodiazepines can lead to drug dependence. Therefore, they are typically prescribed for a limited duration of about 3 to 6 weeks. Adults experiencing night terrors may benefit from psychotherapy or medications. [29] [30] [31]

Nightmares

Nightmares are vivid, frightening dreams, followed by sudden awakening. Children are more likely to have nightmares than adults. Nightmares occur during REM sleep and are more likely to occur when individuals are under stress, have a fever, are excessively tired, or have consumed alcohol. Treatment of nightmares focuses on any underlying problem. [29] [30]

A child having a nightmare may awaken fully and vividly recall the details of the dream. Nightmares are not cause for concern, unless they occur very often. They can occur more often during stressful times, or after a child has watched a frightening or violent movie or TV show. If nightmares occur regularly, parents can keep a diary of the child's daily activities, especially those close to bedtime, to help identify the cause. [31] [32]

Sleepwalking

Sleepwalking, or somnambulism, is walking, sitting, or other complex behaviours performed in a semiconscious state during sleep, usually with the eyes open but without conscious awareness. Sleepwalking is most common during late childhood and adolescence. About 13% of children up until about age 10 have at least one episode of sleepwalking. Approximately one-third of children with night terrors also sleepwalk.

Sleepwalking occurs after and during arousal from NREM stage N3 sleep. Individuals may mumble repetitiously and may injure themselves on obstacles or stairs. Most people who sleepwalk have no memory of the episode.

Sleep deprivation and poor sleep hygiene increase the likelihood of these episodes. The risk is also higher for individuals with first-degree relatives with the disorder. Episodes may be triggered by factors that cause arousals during sleep (e.g., caffeine and other stimulants) and behaviours that disrupt sleep (e.g., exercising or watching an exciting TV show before bedtime), or enhance N3 sleep (e.g., prior sleep deprivation, excessive exercise).

Treatment for sleepwalking focuses on eliminating triggers, such as avoiding:

- Consuming caffeine within 12 hours of bedtime, and
- Engaging in stimulating activities, like exercising, within two hours of bedtime.

Measures to help prevent injuries during sleepwalking include:

- Installing alarms to awaken the person when they leave the bed.
- Gently guiding the person back to bed instead of waking them forcefully, as this could cause agitation.
- Removing obstacles or breakable objects that may be in their path.

- Removing sharp objects from the bedside and other hazards from the bedroom.
- Keeping windows closed and locked and installing door alarms.
- Sleeping in a low bed or on a mattress on the floor to reduce the risk of injury from falls.

Benzodiazepines, particularly clonazepam at bedtime, usually help if behavioural measures are ineffective. However, benzodiazepines have significant adverse effects, such as drowsiness during the day, and long-term use can lead to dependency and substance use disorder. [29] [30] [31] [32]

Rapid eye movement sleep behaviour disorder

Rapid eye movement (REM) sleep behaviour disorder involves speaking (often profanely) and sometimes making aggressive movements during REM sleep, usually in response to a dream.

Aggressive movements may include waving the arms, punching, and kicking. The aggressive behaviour is not intentional or directed at anyone. Individuals may inadvertently injure themselves or their bed partner. This behaviour interferes with sleep, making them tired and sleepy during the day.

These behaviours may indicate acting out of dreams in people who, for reasons not yet understood, do not experience the usual atonia, which is the temporary paralysis of the arms and legs that typically happens during REM sleep. Unlike those who experience night terrors, individuals with REM sleep behaviour disorder are sometimes aware of having vivid dreams during these episodes when they wake up.

REM sleep behaviour disorder is more common in older adults. Most individuals with this disorder have a neurodegenerative disorder, such as Parkinson's disease, Alzheimer disease, multiple system atrophy, dementia with Lewy bodies, multiple system atrophy, or progressive supranuclear palsy. There may be a slightly increased risk of developing Alzheimer's disease in those with REM sleep behaviour disorder.

In individuals with REM sleep behaviour disorder, synuclein accumulates in neurons, as occurs in neurodegenerative disorders such as Parkinson's disease, multiple system atrophy, and dementia with Lewy bodies. Some individuals develop Parkinson's disease years after REM sleep behaviour disorder is diagnosed.¹⁶

Similar behaviour can occur in people who have narcolepsy or who take serotonin norepinephrine reuptake inhibitors (SNRIs), such as atomoxetine, reboxetine, and venlafaxine.

REM sleep behaviour disorder is often diagnosed based on symptoms reported by the individual or their bed partner. Polysomnography (sleep study) can usually confirm the diagnosis by detecting excessive motor activity during REM. A neurological examination is performed to rule out neurodegenerative disorders. If an abnormality is detected,

¹⁶ Listen to episodes 151, 152, and 153 for additional information on Parkinson's disease.

computed tomography (CT) or magnetic resonance imaging (MRI) may be recommended.

There is no cure for the disorder. However, a low dose of clonazepam, a benzodiazepine (a sedative), relieves symptoms in most individuals. Most need to take the drug indefinitely to prevent recurrences. The potential for tolerance or abuse is low. Melatonin (3 to 18 mg) may also help relieve symptoms of REM sleep behaviour disorder, but an optimal dosage is not known.

Bed partners should be informed about the potential harm and may prefer to sleep in a separate bed until the medication takes effect. Sharp objects and furniture should be cleared from the bedside. [29] [30]

Sleep-related leg cramps

Muscle cramps often occur in the calf or foot during sleep in otherwise healthy middle-aged and older adults. Diagnosis of sleep-related cramps is based on symptoms, after other physical problems are ruled out.

Prevention includes stretching the affected muscles for several minutes before sleep. Stretching as soon as cramps occur relieves symptoms promptly and is preferable to pharmacotherapy. Avoiding caffeine and other stimulants may help.

Many medications (e.g., quinine, calcium and magnesium supplements, diphenhydramine, benzodiazepines, mexiletine) have been used. However, none is likely to be effective. Side effects may be significant, particularly with quinine and mexiletine. [29] [30]

Circadian rhythm sleep disorders

Circadian rhythm sleep disorders occur when people's internal sleep-wake schedule (i.e. their body clock) does not align with the earth's light-dark cycle (i.e., day-night cycle). Individuals typically have insomnia, excessive daytime sleepiness, or both, which usually resolve over several days as the body clock realigns itself. In older adults, resolution may take a few weeks or months.

Diagnosis is based on symptoms. Individuals are typically asked to keep a sleep log, recording their sleep and wake times for several weeks. Testing in a sleep laboratory is rarely needed.

Treatment depends on the cause. Exposing the eyes to bright light at appropriate times may be the most helpful strategy. Such exposure helps reset the internal clock. Developing good sleep habits can help.

Circadian rhythms are the regular changes in mental and physical states that occur in 24 hours of a person's internal clock. These rhythms are controlled by the circadian pacemaker, an area of the brain influenced by light. After entering the eye, light stimulates cells in the retina (back of the eye) to send nerve impulses to this area of the

brain. These impulses signal the brain to stop producing melatonin, a hormone that promotes sleep.

People vary in their sleep and wake times. Some people prefer to go to sleep and wake early. Others prefer to go to sleep and wake late. These variations are not a disorder if they can:

- Wake up when needed in the morning and fall asleep the night before at a time that allows them to get enough rest.
- Maintain a consistent sleep-wake schedule every day, if they choose to.
- Adjust to new sleep and wake times within a few days after starting a new routine.

Individuals with a circadian rhythm sleep disorder fall asleep at inappropriate times and then cannot fall asleep or wake up when they need or want to because their sleep-wake cycle is disrupted. Causes of circadian rhythm sleep disorders may be internal or external.

Internal causes of circadian rhythm sleep disorders include:

- Damage to the brain (e.g., due to encephalitis, stroke, head trauma), Alzheimer's disease, or Parkinson's disease.
- Insensitivity to the cycle of night and day.

External causes of circadian rhythm sleep disorders include:

- Jet lag, especially when travelling from west to east.
- Regularly working irregular shifts.
- Frequently going to bed and waking up at different times.
- Being confined to bed for an extended period.
- Blindness or lack of exposure to sunlight for long durations.
- Taking certain medications or unregulated drugs.
- Hospitalization, which can lead to sleep-wake reversals due to nighttime awakenings and insufficient sunlight exposure during the day.

Circadian rhythm sleep disorders include:

- Jet lag disorder
- Shift work disorder
- Altered sleep phase types

Jet lag disorder

Jet lag disorder is caused by rapid travel across more than two time zones. Symptoms are generally more severe with eastward travel compared to westward travel. To minimize the effects of jet lag, travellers should try to gradually adjust their sleep-wake schedule to align with their destination before leaving. After arriving, they should maximize exposure to natural light in the day, especially in the morning, and exposure to darkness before bedtime. Melatonin may help minimize the effects of jet lag.

Shift work disorder

Shift work disorder varies in severity depending on:

- Frequency of shift changes
- How much the shift changes
- Length of shifts
- Number of consecutive nights worked
- Whether sleep and wake times are earlier or later

Always working night or evening shifts and keeping the same bedtimes on days off is preferable. However, daytime noise and light may interfere with sleep quality. Also, workers often shorten their sleep time and sleep at different times on days off to participate in social or family events.

Treatment of shift work disorder may include:

- Spending time in bright light (sunlight or artificial) at times when they should be awake.
- Ensuring the bedroom is as dark and quiet as possible during daytime sleep.
- Wearing sunglasses during the morning commute home to sleep unless it causes drowsiness while driving.
- Sleep masks and white-noise devices maybe helpful.
- Melatonin before bedtime may help.
- Judicious use of prescription short-acting sleep aids and wake-promoting medications when symptoms persist and interfere with functioning.

Altered sleep phase types

In these syndromes, individuals have normal sleep quality and duration with a 24-hour circadian rhythm cycle. However, this cycle is out of sync with desired or necessary wake times. Less commonly, the cycle is not 24 hours, and individuals awaken and sleep earlier or later each day. If they can follow their natural cycle, they have no symptoms. Altered sleep phase types include delayed sleep phase disorder, advanced sleep phase disorder, and non-24-hour sleep-wake syndrome.

Delayed sleep phase disorder

Delayed sleep phase disorder occurs when individuals consistently go to sleep and awaken late (e.g., go to sleep at 3 AM and wake up at 12 PM). This syndrome is more common among adolescents and young adults. Individuals with delayed sleep phase disorder cannot fall asleep earlier, even if they try. Exposure to bright light in the morning may help those with this disorder.

Advanced sleep phase disorder

Advanced sleep phase disorder occurs when individuals consistently fall asleep and awaken early and cannot change this pattern. It is more common in older adults. Individuals with advanced sleep phase disorder cannot stay awake until later, even if they try. Bright light in the evening may help those with this disorder.

Non-24-hour sleep-wake syndrome

Non-24-hour sleep-wake syndrome occurs when a person's sleep-wake cycle changes each day. The length of the sleep-wake cycle remains the same, but it is more than 24 hours. As a result, sleep and wake times are delayed by 1 to 2 hours each day. This syndrome is less common and tends to occur in individuals who are blind. [16] [33]

Narcolepsy

Narcolepsy is a sleep disorder characterized by chronic excessive daytime sleepiness or recurring, uncontrollable episodes of sleep during normal waking hours, usually with sudden, temporary episodes of muscle weakness (cataplexy). Other symptoms include sleep paralysis, vivid dreams, and hallucinations while falling asleep or waking from sleep.

The cause of narcolepsy is unknown. While some individuals with narcolepsy have a similar group of genes, the cause is not thought to be genetic. Environmental factors seem to be involved and may trigger the disorder. Some evidence indicates narcolepsy may result from an autoimmune reaction that destroys certain nerve cells in the brain. Symptoms usually develop in adolescents or young adults without prior illness. However, symptoms may be triggered by an illness, stress, or sleep deprivation.

Individuals with narcolepsy experience excessive sleepiness during the day, which can be disabling and increase the risk of accidents, including motor vehicle accidents. While narcolepsy is a lifelong condition, it does not affect overall life expectancy.

Symptoms of narcolepsy persist throughout life. The main symptoms of narcolepsy are:

- Severe excessive daytime sleepiness.
- Cataplexy (sudden, temporary episodes of muscle weakness).
- Hallucinations while falling asleep (hypnagogic) or waking up (hypnopompic).
- Sleep paralysis.
- Disturbances in nighttime sleep, such as waking up frequently and having vivid, frightening dreams.

Up to 15% of individuals with narcolepsy have all five symptoms. Most people have only a few. All have excessive daytime sleepiness.

Excessive daytime sleepiness

Individuals with narcolepsy have excessive daytime sleepiness, even after sleeping for long periods. They may suddenly have uncontrollable sleep episodes, known as sleep attacks, which can happen at any time and without warning. Falling asleep can be resisted only temporarily.

These episodes can happen multiple times a day or only a few times, and each episode typically lasts a few minutes but may occasionally extend for hours. Individuals can be woken easily, similar to normal sleep. They usually feel refreshed upon waking, even if the sleep episode was brief. However, they may fall asleep again shortly after waking.

Episodes of falling asleep are most likely to occur in monotonous situations, such as reading, watching TV, attending meetings, or driving long distances on the highway. They can also happen while speaking, eating, or writing.

Cataplexy

Cataplexy is a sudden and temporary episode of muscle weakness that occurs while individuals are awake during the day, without any loss of consciousness. These episodes can be triggered by strong emotional reactions, such as anger, fear, joy, laughter, or surprise. During an episode, a person may become limp, drop items they are holding, or fall to the ground.

Cataplexy can also affect other muscles. For example, the jaw may droop, facial muscles may twitch, eyes may close, and the head may nod. Vision can become blurred, and speech may become slurred. These episodes resemble the normal muscle paralysis that occurs during REM sleep. Cataplexy causes significant problems in about 20% of individuals with narcolepsy.

Sleep paralysis

Occasionally, individuals may experience episodes of sleep paralysis when they are just falling asleep or immediately upon waking. These episodes can be frightening. The touch of another person can sometimes relieve the paralysis. Otherwise, it typically resolves on its own within a few minutes. Sleep paralysis occurs in about 25% of individuals with narcolepsy.

Hallucinations

Extremely vivid hallucinations can occur when falling asleep (known as hypnagogic hallucinations) or, less frequently, when waking (called hypnopompic). These hallucinations are difficult to differentiate from intense daydreaming and resemble vivid dreams, which are normal during REM sleep. Approximately 30%-60% of individuals with narcolepsy experience hypnagogic hallucinations.

Disturbances in nighttime sleep

Individuals with narcolepsy often experience interruptions in their nighttime sleep, with frequent awakenings and vivid, frightening dreams. Consequently, their sleep is unrefreshing, resulting in increased daytime sleepiness.

Complications

Individuals with narcolepsy often have trouble functioning and concentrating, making them more prone to accidents, such as falling asleep while driving. The condition can lead to increased stress, decreased productivity and motivation, and poor concentration. As a result, individuals may withdraw from social interactions, potentially harming their personal relationships. Many develop depression over time.

Diagnosis

Narcolepsy may be suspected when individuals with excessive daytime sleepiness have episodes of muscle weakness. However, a delay of 10 years from onset of symptoms to diagnosis of narcolepsy is common. The diagnosis cannot be based on symptoms

alone, as other disorders can cause similar symptoms. Thus, testing in a sleep laboratory is necessary.

Sleep testing in a sleep laboratory consists of:

- Polysomnography
- Multiple sleep latency testing

Polysomnography

Polysomnography measures signals during sleep using flat metal electrodes pasted on the scalp and face to record the brain's electrical activity (electroencephalography [EEG]) as well as eye movements. Applying these electrodes is painless. The recordings help provide information about sleep stages. Electrodes are also attached to other areas of the body to record heart rate (electrocardiography [ECG]), muscle activity (electromyography), and breathing. A painless clip is attached to a finger or an ear to record blood oxygen levels. Polysomnography can detect breathing disorders (e.g., obstructive sleep apnea), seizure disorders, narcolepsy, periodic limb movement disorder, and parasomnias. [34]

Multiple sleep latency test

A multiple sleep latency test (MSLT) measures how long it takes a person to fall asleep during the day. The person spends the day in a sleep laboratory, where they are given the opportunity to take five naps at two-hour intervals. In a darkened room, they are asked to nap. Polysomnography is used during this test to monitor how quickly they fall asleep. It detects when they fall asleep and tracks the stages of sleep, including whether REM (dreaming) sleep occurs. Individuals with narcolepsy typically fall asleep quickly during the MSLT and experience REM sleep in at least two of their naps. [32] [34]

Treatment

There is no cure for narcolepsy. However, treatment helps many people live normally. Treatment for narcolepsy includes:

- Getting enough sleep at night.
- Taking a brief nap (less than 30 minutes) each day at the same time (typically afternoon).
- Avoiding alcohol, smoking, and medications that affect sleep.
- Taking medications to lessen excessive daytime sleepiness and cataplexy (e.g., modafinil, solriamfetol, pitolisant, sodium oxybate). [32] [34] [35]

Periodic Limb Movement Disorder and Restless Legs Syndrome

Periodic limb movement disorder involves repetitive movements of the arms, legs, or both during sleep. Restless legs syndrome involves an irresistible urge to move, often accompanied by abnormal sensations in the legs, arms, or both when sitting still or lying down. Both conditions can disrupt sleep, leading to daytime tiredness and sleepiness. There is no cure for these conditions, but medications may help to control symptoms.

Most individuals with restless legs syndrome also exhibit symptoms of periodic limb movement disorder. However, a majority of those with periodic limb movement disorder do not have restless legs syndrome.

The cause of restless legs syndrome and periodic limb movement disorder is unknown. Notably, one-third or more of individuals with restless legs syndrome have family members with the condition. Risk factors for both include:

- Sedentary lifestyle
- Smoking
- Obesity

Periodic limb movement disorder is more common among middle-aged and older adults and commonly occurs with REM sleep behaviour disorder or narcolepsy.

Both restless legs syndrome and periodic limb movement disorder are more likely to occur in individuals who:

- Stop taking certain medications, including benzodiazepines (e.g., diazepam)
- Take stimulants (e.g., caffeine or stimulant drugs), certain antidepressants, or dopamine antagonists
- Have an iron deficiency
- Have anemia
- Are pregnant¹⁷
- Have severe chronic kidney or liver disorders
- Have diabetes
- Have neurological disorders (e.g., multiple sclerosis, Parkinson's disease) [36] [37]

Symptoms

Symptoms of periodic limb movement disorder include:

- Involuntary twitching and jerking of the legs or arms occurring every 20 to 40 seconds during sleep.
- Individuals are typically unaware of these movements and the brief awakenings that follow. However, they may report poor sleep quality, frequent night awakenings, or daytime sleepiness.
- There are usually no abnormal sensations in the legs or arms.
- Bed partners often complain about being kicked during the night.

Symptoms of restless legs syndrome include:

- An irresistible urge to move the legs when sitting still or lying down.
- Intense and unusual sensations in the legs, which may feel like burning, creeping, tugging, or a sensation like insects crawling inside.
- These sensations can sometimes be accompanied by pain.
- Moving, walking, or stretching the legs tends to relieve the discomfort.
- Individuals may pace, constantly shift their legs while sitting, or toss and turn in bed, making it difficult to relax and fall asleep.

¹⁷ Listen to Episodes 108, 109, and 110 for discussion on pregnancy and oral health.

- During sleep, legs may move spontaneously and uncontrollably, often waking the sleeper.

Symptoms are more likely to occur during times of stress. Episodes may happen occasionally with minimal impact, or they can occur daily, leading to sleep deprivation and difficulties with concentration and daily functioning. [36] [37]

Diagnosis

Diagnosis of restless legs syndrome is based on symptoms reported by the person or their bed partner. Periodic limb movement disorder may be suspected based on symptoms such as insomnia, excessive daytime sleepiness, and/or excessive twitching just before sleep or during sleep.

Polysomnography, which includes electromyography (EMG), is important for diagnosing periodic limb movement disorder. These tests are conducted overnight in a sleep laboratory. During polysomnography, various parameters, such as brain activity, heart rate, breathing, muscle activity, and eye movements, are monitored. Individuals may be videotaped throughout the night to document any limb movements. These tests can also be performed after diagnosing restless legs syndrome to check for the presence of periodic limb movement disorder.

If either disorder is diagnosed, blood and urine tests are carried out to identify contributing factors, such as anemia, iron deficiency, and kidney or liver disorders.

Treatment

Treatment involves dietary changes and medications. It is recommended to avoid caffeine, as it can exacerbate symptoms. For individuals who are iron-deficient, iron supplements are the primary treatment.

Gabapentin, a medication used to treat seizures, is the main treatment option for those with periodic limb movement disorder or restless leg syndrome. This medication alleviates symptoms of restless legs syndrome without worsening the symptoms.

Other medications that may be used to treat restless leg syndrome and periodic limb movement disorder include certain drugs designed for Parkinson's disease and opioids. However, anti-Parkinson medications such as pramipexole, ropinirole, and rotigotine (dopamine agonists) are not recommended for routine use, as they can worsen symptoms of restless leg syndrome and periodic limb movement disorder, as well as cause nausea, hypotension, compulsive behaviours, and insomnia. Opioids may be cautiously prescribed for short-term use in managing severe pain, but they carry the risk of serious side effects and potential for opioid use disorder. [36] [37]

Take home messages:

- Good sleep is essential for good health.
- Sleep problems can affect individuals of all ages, from childhood to old age.

- Issues related to sleep health can impact daily functioning, well-being, quality of life, and cognitive abilities. They are associated with an increased risk of serious health issues, such as obesity, diabetes, hypertension, and cardiovascular diseases.
- Oral health professionals should be knowledgeable about sleep disorders and refer clients experiencing sleep issues to their medical providers.

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Client Resources

Canadian 24-Hour Movement Guidelines: An Integration of Physical Activity, Sedentary Behaviour, and Sleep, Canadian Society for Exercise Physiology
<https://csepguidelines.ca/>

A good night's sleep, CAMH

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Additional Resources

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