PREPARED BY

MRS.SARANYA.T
ASST.PROF
ICON

SLEEP PATTERN AND ITS DISTURBANCES

SLEEP PATTERN AND ITS DISTURBANCES

INTRODUCTION

Sleep is the state of natural rest observed throughout the animal kingdom, in all mammals and birds, and in many reptiles, amphibians, and fish. In humans, other mammals, and many other animals that have been studied - such as fish, birds, ants, and fruit-flies - regular sleep is necessary for survival. The capability for arousal from sleep is a protective mechanism and also necessary for health and survival.

Sleep is an essential life process. It is as important to our well-being as the food we eat, the water we drink, and the air we breathe. Unfortunately, it is easy to take sleep for granted. Busy people sometimes regard sleep as a waste of time. They take time away from sleep to tend to affairs of the day. Sleep deprivation is a common feature of our society, affecting children and adults alike. As a nation, we are increasingly a sleep-deprived people, and we pay a price for it.

Lack of sleep reduces our alertness, impairs our judgment, and affects our moods. Impairments to alertness and judgment due to sleep deprivation not only lead to a loss of productivity at school or work, but also contribute to increased accident rates. It is

especially important that young people preparing to drive recognize the dangers of drowsy driving. To be credible, such educational messages must be based on science.

DEFINITION

"Sleep can e defined as a normal state of altered consciousness during which the body rests; it is characterized by decreased responsiveness to the environment, and a person can be aroused from it by external stimuli."

"A natural periodic state of rest for the mind and body, in which the eyes usually close and consciousness is completely or partially lost, so that there is a decrease in bodily movement and responsiveness to external stimuli. During sleep the brain in humans and other mammals undergoes a characteristic cycle of brain-wave activity that includes intervals of dreaming."

"A condition of body and mind which typically recurs for several hours every night, in which the nervous system is inactive, the eyes closed, the postural muscles relaxed, and consciousness practically suspended."

INCIDENCE AND CHARECTERISTICS

Sleep is generally characterized by a reduction in voluntary body movement, temporary blindness, decreased reaction to external stimuli, loss of consciousness, a reduction in audio receptivity, an increased rate of anabolism (the synthesis of cell structures), and a decreased rate of catabolism (the breakdown of cell structures.

Almost a third of the general population has some problems with sleep during any given year. More than half of the 9000 participants in a study of sleep in elderly persons (65 years or older) reported the following as sleep pattern disturbance that they experience most of the time:

- Trouble falling asleep
- Frequent awakening
- Waking too early
- Needing to nap
- Not feeling rested

These disturbances may be secondary to situational, environmental or developmental stressors, or they may be associated with illness or with pre-existing disorders. The relationship is often reciprocal, in that the disorder decreases sleep & the decreased sleep affects the disorder.

PHYSIOLOGY OF SLEEP

The timing of sleep- wake cycle & other circadian rhythms, such as body temperature, is controlled by the suprachiasmatic nucleus in the anterior hypothalamus. Located above the optic chiasm, this area receives input from the

retina, which provides information about darkness & light. The suprachiasmatic nucleus controls the production of melatonin, which is believed to be a potent sleep inducer.

Arousal from sleep, wakefulness and the ability to respond to stimuli rely on an intact *reticular activating system* (RAS). The RAS is located in the brain stem & contains projections to the thalamus & the cortex. The diffuse network of neurons in the RAS is in a strategic position to monitor ascending and descending stimuli through feedback loops.

Although the RAS provides anatomic framework for arousal, it is the neurotransmitters that serve as the chemical messengers. The onset of sleep and of each subsequent sleep stage is an active process involving delicate shifts in the balance of several of these neurotransmitters.

The transition from wake state to *non- rapid eye movement* (NREM) sleep is marked by decreases in the concentrations of serotonin, nor epinephrine, and acetyl choline. The later transition to *rapid eye movement* (REM) sleep is marked by a

dramatic increase in acetylcholine and further decrease in serotonin and norepinephrine. As REM sleep continues, the concentrations of serotonin and norepinephrine increase, eventually stopping REM sleep. Cholinergic activation with the release of acetylcholine seems to re-establish REM sleep. The continuous interaction of these 2 systems is thought to produce the normal alterations between NREM and REM sleep. Other neurotransmitters, such as gamma- amino butyric acid (GABA) and dopamine are also believed to have a part in the reciprocal processes involved in shifts in sleep state. All of these neurotransmitters are actively involved in the waking process as well.

STAGES OF SLEEP

In mammals and birds, sleep is divided into two broad types: **rapid eye movement** (REM) and **non-rapid eye movement** (NREM or non-REM) sleep. Each type has a distinct set of associated physiological and neurological features.

NREM sleep is characterized as follows:

NREM sleep is divided into stages 1, 2, 3, and 4, representing a continuum of relative depth. Each has unique characteristics including variations in brain wave patterns, eye movements, and muscle tone. Sleep cycles and stages were uncovered with the use of electroencephalographic (EEG) recordings that trace the electrical patterns of brain activity

Stage 1

- includes lightest level of sleep
- constituting 2 to 5 percent of total sleep

- There is a general slowing of EEG frequency
- appearance of waves spikes
- the eyes tend to roll slowly from side to side
- Muscle tension remains absent expect in the facial and neck muscles.
- stage lasts a few minutes
- decreased physiological activity begins with gradual fall in vital signs and metabolism
- sensory stimuli such as noise, easily arouse sleeper
- The stage one sleep for an adult, usually last only 10 or 30 minutes.
- During this stage a sleeper can be easily awakened
- if awakened, person feels as though daydreaming has occurred

Stage 2:

- includes period of sound sleep
- relaxation progresses
- further slowing of EEG pattern
- loss of slow rolling eye movement
- arousal is still relatively easy
- stage lasts 10 – 20 mts
- constituting between 45 to 55 percent of the total sleep
- body functions continue to slow
- the brain waves are frequently mixed and low voltage in pattern, with bursts of activity called sleep spindles and large amplitude waves called K complexes

Stage 3:

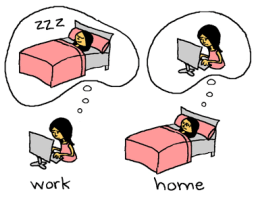
- it involves initial stages of deep sleep

- The EEG shows increased high-voltage, slow-wave activity
- sleeper is difficult to arouse and rarely moves
- oxygen consumption
- muscles are completely relaxed
- vital signs decline, but remain regular
- stage lasts 15 – 30 mts
- constitutes about 3 to 8 percent of sleep.

Stage 4:

- it is deepest stage of sleep
- there is an increased amounts of high-voltage, slow-wave activity on the EEG
- it is very difficult to arouse sleeper
- If sleep loss has occurred, sleeper will spend considerable portion of night in this stage
- Vital signs are significantly lower than during waking hours
- Stage lasts approximately 15 – 30 mts
- makes up about 10 to 15 percent of sleep
- Sleep walking and enuresis sometimes occur
- Stage 3 and 4 known as slow wave sleep, named for the characteristic high voltage and low – frequency delta waves

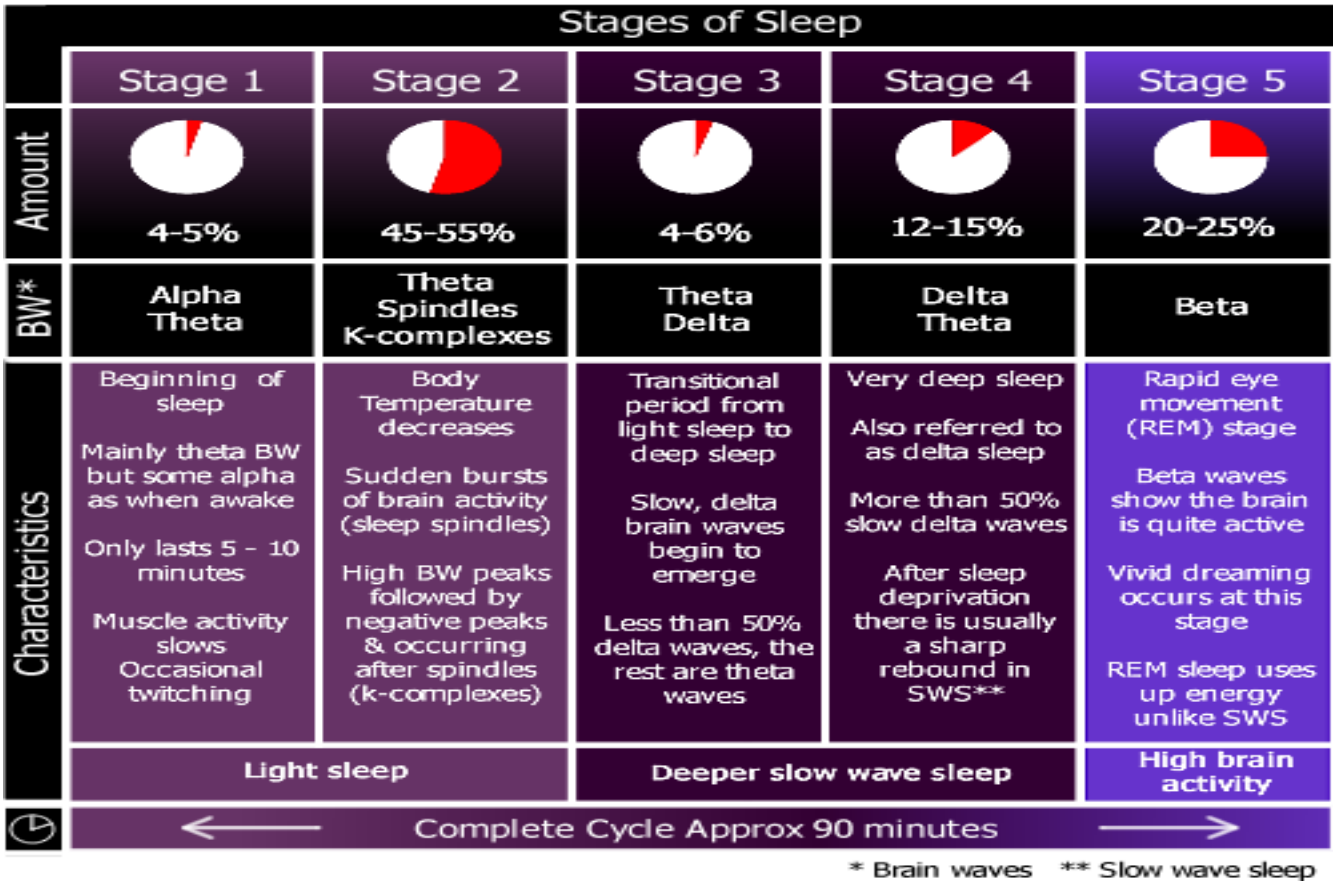
REM sleep



- Vivid, full- color dreaming occurs
- Stage usually begins about 90 mts after sleep has begun

- REM sleep period become longer as the night progresses
- Stage typified by autonomic responses of rapidly moving eyes, fluctuating heart and respiratory rates, and increased or fluctuating blood pressure
- Loss of skeletal muscle tone occurs
- Gastric secretion increase
- It is very difficult to arouse sleeper
- Duration of REM sleep increases with each cycle and averages 20 mts
- It comprises about 20% to 25% of a night's sleep
- REM sleep makes up 50%of the sleep in the newborn, and then gradually declines to 20-25%of sleep by easily childhood.
- The brain is extremely active during REM sleep.
- Stage is characterized by low voltage, random fast waves, as in stage 1 NREM

Fig. 1



NORMAL SLEEP REQUIREMENTS & PATTERNS

Sleep duration and quality vary among persons of all age groups

Average Sleep Needs By Age

Newborn to 2 months old	12 - 18 hrs
3 months to 1 year old	14 - 15 hrs
1 to 3 years old	12 - 14 hrs
3 to 5 years old	11 - 13 hrs
5 to 12 years old	10 - 11 hrs
12 to 18 years old	8.5 - 10 hrs
Adults (18+)	7.5 - 9 hrs

Children need more sleep per day in order to develop and function properly: up to 18 hours for newborn babies, with a declining rate as a child ages. A newborn baby spends almost 9 hours a day in REM sleep. By the age of five or so, only slightly over two hours is spent in REM. Studies say that school age children need about 10 to 11 hours of sleep

As people age, their circadian clock advances, causing advanced sleep phase syndrome. The syndrome is common in older adults and often is the reason behind the complaint of waking early in the morning and unable to get back to sleep. They get sleepy early in the evening

FACTORS AFFECTING SLEEP

A number of factors affect the quality and quantity of sleep. Often more than one factor combined to cause a sleep problem.

- Physical illness (e.g. Nausea, mood disorders, breathing difficulty, pain)
- Drugs and substances (e.g. Tryptophan)
- Lifestyle (e.g. Daily routines, exercises)
- Unusual sleep patterns and excessive daytime sleepiness

- Environment (ventilation
- Emotional stress
- Temperature
- Sexual activity
- Food and caloric intake
- Motivation
- Smoking
- Bedroom
- Bath
- Mattress
- Exercise and fatigue
- Pain and disturbance
- Clutter free
- Light
- Sound

- **PHYSICAL ILLNESS**

The disease can lead to pain or physical distress that can cause sleep disorders. Individuals who are sick need more sleep than usual; in addition, sleep-wake cycles during illness may also experience interference.

- **DRUGS AND SUBSTANCES**

Sleepiness, insomnia, and fatigue often results as a direct effect of commonly prescribed medication.

Drugs and their effect on sleep

Hypnotics	-interfere with reaching deeper sleep stage -Provide only temporary *(I week) increase in quantity of sleep -Eventually causes hang over during day: excess drowsiness, confusion, decreased energy. -May worsen sleep apnea in older adult.
Diuretics	-nighttime awakening caused by nocturia
Antidepressant and stimulant	- suppress REM sleep -Decrease total sleep time
Alcohol	- speeds onset of sleep -Reduces REM sleep

	-Awakens person during night and causes difficulty returning to sleep
Caffeine	- prevents person from falling asleep -May cause person to awaken during night -Interferes with REM sleep
Beta adrenergic blockers	-cause nightmares -Cause insomnia -Cause awakening from sleep
Benzodiazepines	-Alter REM sleep -Increase sleep time -Increase day time sleep
Narcotics	-suppress REM sleep -Causes increased daytime drowsiness
Anticonvulsant	-decrease REM sleep time -May cause daytime drowsiness

- **LIFESTYLE**

Continuous changes in the life style affect the pattern of the sleep. Performing unaccustomed heavy work, engaging in late night social activities' and changing evening mealtime also affect the sleep pattern. The ability to fall and remain sleep.

For e.g.

An individual working a rotating shift often has difficulty adjusting to the altered sleep schedule. The body‘s internal clock might be set at 11 pm, but the work schedule forces sleep at 9 am instead. The individual may be perceives that it is times to be awake and active. Difficulties with maintaining alertness during work time can result in weeks of working a night shift a person’s biological clock usually does adjust.

- **UNUSUAL SLEEP PATTERNS AND EXCESSIVE DAYTIME SLEEPINESS**

Sleepiness becomes pathological when it occurs at times when individuals need or want to be awake. People who experience temporary sleep deprivation as a result of an active social evening or lengthened work schedule usually feel sleepy the next day. Chronic lacks of sleep much more serious than temporary sleep deprivation and can cause serious alteration in the ability to perform daily function.

- **ENVIRONMENT**

Environmental factors can help as well as hinder the process of sleep. The absence of a particular stimulus or the presence of foreign stimulus could undermine efforts to sleep. For example, the temperature is uncomfortable or poor ventilation can affect one's sleep. However, individuals can adapt over time and are no longer affected by the condition.

- **EMOTIONAL STRESS**

Worry over the person problem or situations can disrupt sleep older client frequently experiences losses that lead to emotional stress such as retirement, physical impairment ,or the death of a loved one.

- **TEMPERATURE**

An ambient temperature of 18°C is ideal for falling asleep and staying asleep. Increased and decreased temperature results in disrupted sleep.

- **SEXUAL ACTIVITY**

Unlike other forms of activity, sexual intercourse usually promotes falling asleep.

- **FOOD AND CALORIC INTAKE**

Good eating habit is important for proper health, including sleep. Eating a heavy, large and /or spicy meal at night may result in indigestion that interferes with sleep. Caffeine and alcohol consumed in the evening have insomnia – producing effects. Food allergies may cause insomnia

Hunger is associated with wakefulness. Carbohydrates and milky drinks that contain tryptophan, a compound which is broken down in the body to produce melatonin, are excellent at promoting sleep. Bananas, peanuts and figs are also rich sources of tryptophans. High protein foods are rich in tyrosine (a hormone which promotes wakefulness) and can lead to wakefulness. Large meals can cause reflux and heartburn and drive wakefulness.

Weight loss was associated with decreased sleep and frequent waking at night. In contrast, weight gain was associated with increased total sleep period and the least awake at night.

- **MOTIVATION.**

  The desire to stay awake sometimes can mask a person's feeling tired. Conversely, feelings of boredom or lack of motivation to awake can often bring drowsiness

- **SMOKING.**

  Nicotine contained in cigarettes has a stimulating effect on the body. As a result, smokers often difficult to sleep and wake up at night easy.

- **BEDROOM**

A cooler bedroom is thought to enable a better environment for sleep as it mirrors the fall in the core body temperature of the sleeper. Hotter environments can lead to a more disturbed night’s sleep as it affects the REM sleep and can lead to

more awakenings during the night. Please note that the environment can be affected by what the sleeper is wearing, the duvet size the fluctuating temperature of the sleeper.

- **BATHS**

Having a bath may relax you as water can have a calming effect on us. It also thought to cause a reactive decrease in our body temperatures which allows us to sleep more readily.

- **MATTRESS**

Sleeping on a good quality bed and mattress can make all the difference to your sleeping pattern. Second hand or older beds, due to their poor hygiene, and cause sleep disturbance, leaving you feeling tired. Irritable and in some cases, unwell. A mattress will absorb a lot of moisture and skin cells over its life time, making it perfect environment for the house dust mite. This is thanks to, on average, an adult perspiring and breathing out around ½ liter of moisture every night, as well as shedding about half a kilo of dead skin per year! This is why it is important to not only clean your bedding, and mattress on a regular basis, but to also change your mattress and bed about every 10 years-keeping your sleeping environment clean, and more importantly keeping yourself healthy.

- **EXERCISE AND FATIGUE**

Exercise promotes wakefulness during the activity and also for 3 hours after the activity. Exercise close to the time of going to bed can delay and decrease melatonin secretion. This is important as melatonin is a hormone produced by the pineal gland which promotes sleep.

-

Tired body condition can affect a person's sleep patterns. The more tired you are, the shorter REM sleep cycle in its path. After resting normally elongated REM cycle will return.

- **PAIN AND DISCOMFORT**

Awakening during the night is more common in individuals with chronic disease such as rheumatoid arthritis or multiple sclerosis. Pain is also associated with increased tossing and turnings that also result with increased awakening during night.

- **CLUTTERR FREE**

A bedroom that is free of electronic devices is also thought to aid a better night's sleep as the room becomes solely a place that the sleeper enters to sleep. Watching TV in bed is a delay for actual sleep to commence and is thought to steal valuable sleep time. Removing clutter from your room will hopefully help remove the clutter from your mind!

- **LIGHT**

A darkroom is favoured by most to fall asleep in, but a natural light in the morning when you are waking up is thought to make you feel more alert and more willing to get out of bed as it mirrors dawn and the natural process of waking up.
Seasonal changes in the duration of day light affect the sleep-wakefulness cycle. During sleep, 5-10% of light exposure can result in arousal from non-REM sleep.

- **NOISE**

A noise environment can impair sleep and increase arousal from sleep. The noise level that causes an individual to wake varies between people and also changes with age. A person is also more likely to wake up if the noise is significant to the person, the crying of an infant to its parents.

Promoting Rest and Sleep

Determine the patient's usual rest and sleep patterns, decide whether they are sufficient, and note why the patient is not getting sufficient rest.

- A plan should be developed to provide for more rest.
- Limit interruptions during the night.

- Provide a quiet environment with a comfortable room temperature.
- Limit the number of visitors and duration of visits.
- Carry out all procedures within a given time frame.

Sleep and Rest Promoting Rest and Sleep

- Preparing the patient for sleep
- Wash the patient's back.
- Gently massage the back.
- Change the linens.
- Make certain the patient is warm enough.
- Offer a caffeine-free beverage such as milk.
- Change soiled dressings.
- Have the patient void.
- Environmental stimuli should be decreased by dimming the lights and decreasing the noise level.

Nursing Process Nursing Diagnoses Pain, acute or chronic

- Activity intolerance
- Anxiety
- Body image, disturbed
- Caregiver role strain
- Coping, ineffective and/or disabled family
- Disuse syndrome, risk for
- Family processes, interrupted
- Fatigue
- Fear

SLEEP DISORDERS

Sleep pattern disturbance is a nursing diagnosis that is defined as a disruption of sleep time that causes discomfort or interferes with a desired life cycle. A sleep pattern disturbance may be related to one of more than 80 sleep disorders identified in the international classification of sleep disorders, a partial list of which is given below:

1. Dyssomnias
    a. Insomnia
    b. Primary Hypersomnia
        - Narcolepsy
        - Idiopathic Hypersomnia
        - Recurrent Hypersomnia
        - Post traumatic Hypersomnia
        - Menstrual related Hypersomnia
    c. Sleep disorder breathing
        - Sleep apnea syndrome
            - Central sleep apnea syndrome
            - Obstructive sleep apnea syndrome
        - Snoring
        - Upper airway resistance syndrome
    d. Restless leg syndrome
    e. Periodic limb movement
    f. Circadian rhythm sleep disorders
        - Delayed sleep phase syndrome

        - Advanced sleep phase syndrome
        - Non 24-hour sleep wake syndrome
2. Parasomnias
    a. REM sleep behaviour disorder
    b. Sleep terror
    c. Sleep walking
    d. Bruxism
    e. Bed wetting
    f. Sleep talking
    g. Sleep sex
    h. Exploding head syndrome
3. Medical and psychiatric condition that may produce sleep disorders.
    a. Neurotransmitter imbalance
    b. Head injury
    c. Hormonal imbalances
    d. Respiratory disorders
    e. Cardiovascular disorders
    f. Gastro intestinal disorders
    g. Psychosis
    h. Mood disorders
        - Depression
        - Anxiety
        - Panic
        - Alcoholism
4. Hospital acquired sleep disturbances
    a. Sleep onset difficulty
    b. Sleep maintenance disturbances

c. Early morning awakening
d. Sleep deprivation

1. DYSSOMNIAS

The Dyssomnias include sleep disorders characterized by difficulty in initiating or maintaining sleep (insomnia) or by excessive sleepiness. These disorders may arise predominantly from within the body (intrinsic), from external sources (extrinsic), or from disruption of circadian rhythm.

a. INSOMNIA

Insomnia, or **sleeplessness**, is a sleep disorder in which there is an inability to fall asleep or to stay asleep as long as desired. While the term is sometimes used to describe a disorder demonstrated by polysomnographic evidence of disturbed sleep, insomnia is often practically defined as a positive response to either of two questions: "Do you experience difficulty sleeping?" or "Do you have difficulty falling or staying asleep?"

Insomnia is most often thought of as both a sign and a symptom that can accompany several sleep, medical, and psychiatric disorders characterized by a persistent difficulty falling asleep and/or staying asleep or sleep of poor quality. Insomnia is typically followed by functional impairment while awake. Insomnia can occur at any age, but it is particularly common in the elderly. Insomnia can be short term (up to three weeks) or long term (above 3–4 weeks), which can lead to memory problems, depression, irritability and an increased risk of heart disease and automobile related accidents.

Those who are having trouble sleeping sometimes turn to sleeping pills, which can help when used occasionally but may lead to dependence or addiction if used regularly for an extended period.

Insomnia can be grouped into primary and secondary, or comorbid, insomnia. Primary insomnia is a sleep disorder not attributable to a medical, psychiatric, or environmental cause. It is described as a complaint of prolonged sleep onset latency, disturbance of sleep maintenance, or the experience of non-refreshing sleep. A complete diagnosis will differentiate between free-standing primary insomnia, insomnia as secondary to another condition, and primary insomnia co-morbid with one or more conditions.

♥ Types of insomnia

Insomnia can be classified as transient, acute, or chronic.

1. **Transient insomnia** lasts for less than a week. It can be caused by another disorder, by changes in the sleep environment, by the timing of sleep, severe depression, or by stress. Its consequences – sleepiness and impaired psychomotor performance – are similar to those of sleep deprivation.
2. **Acute insomnia** is the inability to consistently sleep well for a period of less than a month. Insomnia is present when there is difficulty initiating or maintaining sleep or when the sleep that is obtained is non-refreshing or of poor quality. These problems occur despite adequate opportunity and circumstances for sleep and they must result in problems with daytime function. Acute insomnia is also known as short term insomnia or stress related insomnia.

3. **Chronic insomnia** lasts for longer than a month. It can be caused by another disorder, or it can be a primary disorder. People with high levels of stress hormones or shifts in the levels of cytokines are more likely to have chronic insomnia. Its effects can vary according to its causes. They might include muscular fatigue, hallucinations, and/or mental fatigue. Some people that live with this disorder see things as if they are happening in slow motion, wherein moving objects seem to blend together Chronic insomnia can cause double vision

♥ Patterns of insomnia

Symptoms of insomnia

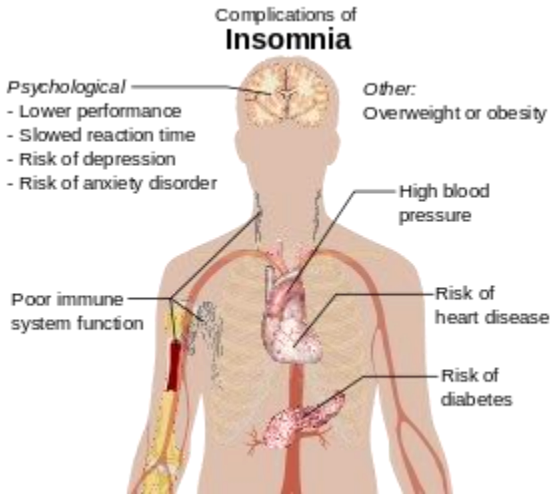
- difficulty falling asleep, including difficulty finding a comfortable sleeping position
- waking during the night and being unable to return to sleep
- feeling unrefreshed upon waking
- Daytime sleepiness, irritability or anxiety

Sleep-onset insomnia is difficulty falling asleep at the beginning of the night, often a symptom of anxiety disorders. Delayed sleep phase disorder can be misdiagnosed as insomnia as it causes a delayed period of sleep, spilling over into daylight hours.

It is common for patients who have difficulty falling asleep to also have nocturnal awakenings with difficulty returning to sleep. Two thirds of these patients wake up in middle of the night, with more than half having trouble falling back to sleep after a middle of the night awakening.

Early morning awakening is an awakening occurring earlier (more than 30 minutes) than desired with an inability to go back to sleep, and before total sleep time reaches 6.5 hours. Early morning awakening is often a characteristic of depression.

♥ Causes and comorbidity



Potential complications of insomnia.

Symptoms of insomnia can be caused by or be co-morbid with:

- Use of psychoactive drugs (such as stimulants), including certain medications, herbs, caffeine, nicotine, cocaine, amphetamines, methylphenidate, aripiprazole, MDMA, modafinil, or excessive alcohol intake.
- Withdrawal from anti-anxiety drugs such as benzodiazepines or pain-relievers such as opioids
- Use of fluoroquinolone antibiotic drugs is associated with more severe and chronic types of insomnia.

- Restless legs syndrome, which can cause sleep onset insomnia due to the discomforting sensations felt and the need to move the legs or other body parts to relieve these sensations.
- Periodic limb movement disorder (PLMD), which occurs during sleep and can cause arousals of which the sleeper is unaware.
- Pain] An injury or condition that causes pain can preclude an individual from finding a comfortable position in which to fall asleep, and can in addition cause awakening.
- Hormone shifts such as those that precede menstruation and those during menopause.
- Life events such as fear, stress, anxiety, emotional or mental tension, work problems, financial stress, birth of a child and bereavement.
- Gastrointestinal issues such as heartburn or constipation
- Mental disorders such as bipolar disorder, clinical depression, generalized anxiety disorder, post traumatic stress disorder, schizophrenia, obsessive compulsive disorder, and dementia or ADHD
- Disturbances of the circadian rhythm, such as shift work and jet lag, can cause an inability to sleep at some times of the day and excessive sleepiness at other times of the day. Chronic circadian rhythm disorders are characterized by similar symptoms.
- Certain neurological disorders, brain lesions, or a history of traumatic brain injury.
- Medical conditions such as hyperthyroidism and rheumatoid arthritis
- Abuse of over-the counter or prescription sleep aids (sedative or depressant drugs) can produce rebound insomnia.
- Poor sleep hygiene, e.g., noise or over consumption of caffeine

- A rare genetic condition can cause a prion-based, permanent and eventually fatal form of insomnia called fatal familial insomnia.
- Physical exercise. Exercise-induced insomnia is common in athletes in the form of prolonged sleep onset latency.

Sleep studies using polysomnography have suggested that people who have sleep disruption have elevated nighttime levels of circulating cortisol and adrenocorticotropic hormone They also have an elevated metabolic rate, which does not occur in people who do not have insomnia but whose sleep is intentionally disrupted during a sleep study. Studies of brain metabolism using positron emission tomography (PET) scans indicate that people with insomnia have higher metabolic rates by night and by day. The question remains whether these changes are the causes or consequences of long-term insomnia.

♥ Steroid Hormones and Insomnia

Studies have been conducted with steroid hormones and insomnia. Changes in levels of cortisol, progesterone in the female cycle, or estrogen during menopause are correlated with increased occurrences of insomnia. Those with differing levels of cortisol often have long-term insomnia, where estrogen is onset insomnia catalyzed by menopause, and progesterone is temporary insomnia within the monthly female cycle.

Cortisol

Cortisol is typically thought of as the stress hormone in humans, but it is also the awakening hormone. Analyzing saliva samples taken in the morning has shown that patients with insomnia wake up with significantly lower cortisol levels when compared to a control group with regular sleeping patterns. Further studies have

revealed that those with lower levels of cortisol upon awakening also have poorer memory consolidation in comparison to those with normal levels of cortisol Studies support that larger amounts of cortisol released in the evening occurs in primary insomnia. In this case, drugs related to calming mood disorders or anxiety, such as antidepressants, would regulate the cortisol levels and help prevent insomnia.

Estrogen

Many postmenopausal women have reported changes in sleep patterns since entering menopause that reflect symptoms of insomnia. This could occur because of the lower levels of estrogen. Lower estrogen levels can cause hot flashes, change in stress reactions, or overall change in the sleep cycle, which all could contribute to insomnia. Estrogen treatment as well as estrogen-progesterone combination supplements as a hormone replacement therapy can help regulate menopausal women's sleep cycle again.

Progesterone

Low levels of progesterone throughout the female menstruation cycle, but primarily near the end of the luteal phase, have also been known to correlate with insomnia as well as aggressive behavior, irritability, and depressed mood in women. Around 67% of women have problems with insomnia right before or during their menstrual cycle. Lower levels of progesterone can, like estrogen, correlate with insomnia in menopausal women.

A common misperception is that the amount of sleep required decreases as a person ages. The ability to sleep for long periods, rather than the need for sleep, appears to be lost as people get older. Some elderly insomniacs toss and turn in bed and occasionally fall off the bed at night, diminishing the amount of sleep they receive.

♥ Risk factors

Insomnia affects people of all age groups but people in the following groups have a higher chance of acquiring insomnia.

- Individuals older than 60
- History of mental health disorder including depression, etc.
- Emotional stress
- Working late night shifts
- Travelling through different time zones

♥ Diagnosis

Specialists in sleep medicine are qualified to diagnose the many different sleep disorders. Patients with various disorders, including delayed sleep phase syndrome, are often mis-diagnosed with primary insomnia. When a person has trouble getting to sleep, but has a normal sleep pattern once asleep, a circadian rhythm disorder is a likely cause.

In many cases, insomnia is co-morbid with another disease, side-effects from medications, or a psychological problem. Approximately half of all diagnosed insomnia is related to psychiatric disorders. In depression in many cases "insomnia should be regarded as a co-morbid condition, rather than as a secondary one;" insomnia typically predates psychiatric symptoms. "In fact, it is possible that insomnia represents a significant risk for the development of a subsequent psychiatric disorder."

Knowledge of causation is not necessary for a diagnosis.

♥ Treatment

It is important to identify or rule out medical and psychological causes before deciding on the treatment for insomnia. **Cognitive behavioral therapy** (CBT) "has been found to be as effective as prescription medications are for short-term treatment of chronic insomnia. Moreover, there are indications that the beneficial effects of CBT, in contrast to those produced by medications, may last well beyond the termination of active treatment." Pharmacological treatments have been used mainly to reduce symptoms in acute insomnia; their role in the management of chronic insomnia remains unclear. Several different types of medications are also effective for treating insomnia. However, many doctors do not recommend relying on prescription sleeping pills for long-term use. It is also important to identify and treat other medical conditions that may be contributing to insomnia, such as depression, breathing problems, and chronic pain.

♥ Non-pharmacological

Non-pharmacological strategies are superior to hypnotic medication for insomnia because tolerance develops to the hypnotic effects in some patients. In addition, dependence can develop with rebound withdrawal effects developing upon discontinuation. Hypnotic medication is therefore only recommended for short-term use, especially in acute or chronic insomnia. Non pharmacological strategies however, have long lasting improvements to insomnia and are recommended as a first line and long term strategy of managing insomnia. The strategies include attention to sleep hygiene, stimulus control, behavioral interventions, sleep-restriction therapy, paradoxical intention, patient education and relaxation therapy. Reducing the temperature of blood flowing to the brain slows the brain's metabolic rate thereby reducing insomnia. Some examples are keeping a journal, restricting the time

spending awake in bed, practicing relaxation techniques, and maintaining a regular sleep schedule and a wake-up time Behavioral therapy can assist a patient in developing new sleep behaviors to improve sleep quality and consolidation. Behavioral therapy may include, learning healthy sleep habits to promote sleep relaxation, undergoing light therapy to help with worry-reduction strategies and regularizing your biological clock.

EEG biofeedback has demonstrated effectiveness in the treatment of insomnia with improvements in duration as well as quality of sleep.

Stimulus control therapy is a treatment for patients who have conditioned themselves to associate the bed, or sleep in general, with a negative response. As stimulus control therapy involves taking steps to control the sleep environment, it is sometimes referred interchangeably with the concept of sleep hygiene. Examples of such environmental modifications include using the bed for sleep or sex only, not for activities such as reading or watching television; waking up at the same time every morning, including on weekends; going to bed only when sleepy and when there is a high likelihood that sleep will occur; leaving the bed and beginning an activity in another location if sleep does not result in a reasonably brief period of time after getting into bed (commonly ~20 min); reducing the subjective effort and energy expended trying to fall asleep; avoiding exposure to bright light during nighttime hours, and eliminating daytime naps.

A component of stimulus control therapy is sleep restriction, a technique that aims to match the time spent in bed with actual time spent asleep. This technique involves maintaining a strict sleep-wake schedule, sleeping only at certain times of the day and for specific amounts of time to induce mild sleep deprivation. Complete treatment usually lasts up to 3 weeks and involves making oneself sleep for only a minimum

amount of time that they are actually capable of on average, and then, if capable (i.e. when sleep efficiency improves), slowly increasing this amount (~15 min) by going to bed earlier as the body attempts to reset its internal sleep clock. Bright light therapy, which is often used to help early morning wakers reset their natural sleep cycle, can also be used with sleep restriction therapy to reinforce a new wake schedule. Although applying this technique with consistency is difficult, it can have a positive effect on insomnia in motivated patients.

Paradoxical intention is a cognitive reframing technique where the insomniac, instead of attempting to fall asleep at night, makes every effort to stay awake (i.e. essentially stops trying to fall asleep). One theory that may explain the effectiveness of this method is that by not voluntarily making oneself go to sleep, it relieves the performance anxiety that arises from the need or requirement to fall asleep, which is meant to be a passive act. This technique has been shown to reduce sleep effort and performance anxiety and also lower subjective assessment of sleep-onset latency and overestimation of the sleep deficit (a quality found in many insomniacs).

Meditation has been recommended for the treatment of insomnia. The meditation teacher Siddhārtha Gautama, 'The Buddha', is recorded as having recommended the practice of 'loving-kindness' meditation, or_mettā bhāvanā as a way to produce relaxation and thereby, sound sleep – putting it first in a list of the benefits of that meditation. More recently, studies have concluded that: a mindfulness practice reduced mental and bodily restlessness before sleep and the subjective symptoms of insomnia; and that mindfulness-based cognitive behavioural therapy reduced restlessness, sleep effort and dysfunctional sleep-related thoughts including worry.

Cognitive behavioral therapy

There is some evidence that cognitive behavioural therapy for insomnia is superior in the long-term to benzodiazepines and the nonbenzodiazepines in the treatment and management of insomnia. In this therapy, patients are taught improved sleep habits and relieved of counter-productive assumptions about sleep. Common misconceptions and expectations that can be modified include: (1) unrealistic sleep expectations (e.g., I need to have 8 hours of sleep each night), (2) misconceptions about insomnia causes (e.g., I have a chemical imbalance causing my insomnia), (3) amplifying the consequences of insomnia (e.g., I cannot do anything after a bad night's sleep), and (4) performance anxiety after trying for so long to have a good night's sleep by controlling the sleep process. Numerous studies have reported positive outcomes of combining cognitive behavioral therapy for insomnia treatment with treatments such as stimulus control and the relaxation therapies. Hypnotic medications are equally effective in the short-term treatment of insomnia but their effects wear off over time due to tolerance. The effects of CBT-I have sustained and lasting effects on treating insomnia long after therapy has been discontinued. The addition of hypnotic medications with CBT-I adds no benefit in insomnia. The long lasting benefits of a course of CBT-I show superiority over pharmacological hypnotic drugs. Even in the short term when compared to short-term hypnotic medication such as zolpidem (Ambien), CBT-I still shows significant superiority. Thus CBT-I is recommended as a first line treatment for insomnia. Metacognition is also a recent trend in approach to behaviour therapy of insomnia.

♥ Prevention

Insomnia can be short-term or long-term. Prevention of sleeping disorder may include maintaining a consistent sleeping schedule, such as waking up and sleeping at the same time. Also, one should avoid caffeinated drinks during the 8 hours before

sleeping time. While exercise is essential and can aid the process of sleeping, it is important to not exercise right before bedtime, therefore creating a calm environment. Lastly, one's bed should only be for sleep and possibly sexual intercourse. These are some of the points included in sleep hygiene. Going to sleep and waking up at the same time every day can create a steady pattern, which may help against insomnia.

- ♥ **Medications**

Many insomniacs rely on sleeping tablets and other sedatives to get rest. In some places medications are prescribed to over 95% of insomniac cases. As an alternative to taking prescription drugs, some evidence shows that an average person seeking short-term help may find relief from taking over-the-counter antihistamines such as diphenhydramine or doxylamine. Certain classes of sedatives such as benzodiazepines and newer nonbenzodiazepine drugs can also cause physical dependence, which manifests in withdrawal symptoms if the drug is not carefully tapered down. The benzodiazepine and nonbenzodiazepine hypnotic medications also have a number of side-effects such as day time fatigue, motor vehicle crashes, cognitive impairments and falls and fractures. Elderly people are more sensitive to these side-effects. The non-benzodiazepines zolpidem and zaleplon have not adequately demonstrated effectiveness in sleep maintenance. Some benzodiazepines have demonstrated effectiveness in sleep maintenance in the short term but in the longer term are associated with tolerance and dependence. Drugs that may prove more effective and safer than existing drugs for insomnia are in development.

Benzodiazepines and nonbenzodiazepines have similar efficacy that is not significantly more than for antidepressants. Benzodiazepines did not have a significant tendency for more adverse drug reactions. Chronic users of hypnotic

medications for insomnia do not have better sleep than chronic insomniacs not taking medications. In fact, chronic users of hypnotic medications have more regular nighttime awakenings than insomniacs not taking hypnotic medications. A further review of the literature regarding benzodiazepine hypnotic as well as the nonbenzodiazepines concluded that these drugs cause an unjustifiable risk to the individual and to public health and lack evidence of long-term effectiveness. The risks include dependence, accidents, and other adverse effects. Gradual discontinuation of hypnotics in long-term users leads to improved health without worsening of sleep. It is preferred that hypnotics be prescribed for only a few days at the lowest effective dose and avoided altogether wherever possible in the elderly.

Antihistamines

The antihistamine diphenhydramine is widely used in nonprescription sleep aids such as Benadryl. The antihistamine doxylamine is used in nonprescription sleep aids such as Unisom (USA) and Unisom 2 (Canada). In some countries, including Australia, it is marketed under the names Restavit and Dozile. It is the most effective over-the-counter sedative currently available in the United States, and is more sedating than some prescription hypnotics.

While the two drugs mentioned above are available over the counter in most countries, the effectiveness of these agents may decrease over time, and the incidence of next-day sedation is higher than for most of the newer prescription drugs. Anticholinergic side-effects may also be a drawback of these particular drugs. While addiction does not seem to be an issue with this class of drugs, they can induce dependence and rebound effects upon abrupt cessation of use.

Benzodiazepines

Normison (temazepam) is a benzodiazepine commonly prescribed for insomnia and other sleep disorders.

The most commonly used class of hypnotics prescribed for insomnia are the benzodiazepines. Benzodiazepines all bind unselectively to the $GABA_A$ receptor. But certain benzodiazepines (hypnotic benzodiazepines) have significantly higher activity at the α_1 subunit of the $GABA_A$ receptor compared to other benzodiazepines (for example, triazolam and temazepam have significantly higher activity at the α_1 subunit compared to alprazolam and diazepam, making them superior sedative-hypnotics – alprazolam and diazepam in turn have higher activity at the α_2 subunit compared to triazolam and temazepam, making them superior anxiolytic agents). Modulation of the α_1 subunit is associated with sedation, motor-impairment, respiratory depression, amnesia, ataxia, and reinforcing behavior (drug-seeking behavior). Modulation of the α_2 subunit is associated with anxiolytic activity and disinhibition. For this reason, certain benzodiazepines are better suited to treat insomnia than others. Hypnotic benzodiazepines include drugs such as temazepam, flunitrazepam, triazolam, flurazepam, midazolam, nitrazepam, and quazepam. These drugs can lead to tolerance, physical dependence, and the benzodiazepine withdrawal syndrome upon discontinuation, especially after consistent usage over long periods of time. Benzodiazepines, while inducing unconsciousness, actually worsen sleep as they promote light sleep while decreasing time spent in deep sleep. A further problem is, with regular use of short-acting sleep aids for insomnia, daytime rebound anxiety can emerge. Benzodiazepines can help to initiate sleep and increase sleep time, but they

also decrease deep sleep and increase light sleep. Although there is little evidence for benefit of benzodiazepines in insomnia and evidence of major harm, prescriptions have continued to increase. There is a general awareness that long-term use of benzodiazepines for insomnia in most people is inappropriate and that a gradual withdrawal is usually beneficial due to the adverse effects associated with the long-term use of benzodiazepines and is recommended whenever possible.

Non-benzodiazepines

Nonbenzodiazepine sedative-hypnotic drugs, such as zolpidem, zaleplon, zopiclone, and eszopiclone, are a class hypnotic medications indicated for mild to moderate insomnia. Their effectiveness at improving time to sleeping is slight. However, there are controversies over whether these non-benzodiazepine drugs are superior to benzodiazepines. These drugs appear to cause both psychological dependence and physical dependence, though less than traditional benzodiazepines and can also cause the same memory and cognitive disturbances along with morning sedation.

Antidepressants

Some antidepressants such as amitriptyline, doxepin, mirtazapine, and trazodone can have a sedative effect, and are prescribed to treat insomnia. Amitriptyline and doxepin both have antihistaminergic, anticholinergic, and antiadrenergic properties, which contribute to their side-effect profile, while mirtazapines side-effects are primarily antihistaminergic, and trazadones side-effects are primarily antiadrenergic. Some also alter sleep architecture. As with benzodiazepines, the use of antidepressants in the treatment of insomnia can lead to withdrawal effects; withdrawal may induce rebound insomnia.

Mirtazapine is known to decrease sleep latency, promoting sleep efficiency and increasing the total amount of sleeping time in people with both depression and insomnia.

Melatonin

Melatonin is a hormone synthesized by the pineal gland, secreted through the bloodstream in the dark or commonly at nighttime, in order to control the sleep cycle.

Evidence for ramelteon looks promising. It and tasimelteon, increase sleep time due to a melatonin rhythm shift with no apparent negative effectives next day. Although thus far there has been little evidence of abuse, but most melatonin drugs have not been highly tested for longitudinal side effects because of the lack of approval, except for Ramelteon, from the Food and Drug Administration, concluding that all the risks are not known at this time. It is recommended that people who take melatonin take it at night right before going to bed.

Studies have also shown that children with Autism spectrum disorders, learning disabilities, Attention-Deficit Hyperactivity Disorder (ADHD) and other related neurological diseases can benefit from the use of melatonin. This is because they often have trouble sleeping due to their disorders. For example, children with ADHD tend to have trouble falling asleep because of their hyperactivity and, as a result, tend to be tired during most of the day. Children who have ADHD then, as well as the other disorders mentioned, are given melatonin before bedtime in order to help them sleep. The sleep cycle regulates for these children when given the melatonin supplement.

Alcohol

Alcohol is often used as a form of self-treatment of insomnia to induce sleep. However, alcohol use to induce sleep can be a cause of insomnia. Long-term use of alcohol is associated with a decrease in NREM stage 3 and 4 sleep as well as suppression of REM sleep and REM sleep fragmentation. Frequent moving between sleep stages occurs, with awakenings due to headaches, the need to urinate, dehydration, and excessive sweating. Glutamine rebound also plays a role as when someone is drinking; alcohol inhibits glutamine, one of the body's natural stimulants. When the person stops drinking, the body tries to make up for lost time by producing more glutamine than it needs. The increase in glutamine levels stimulates the brain while the drinker is trying to sleep, keeping him/her from reaching the deepest levels of sleep. Stopping chronic alcohol use can also lead to severe insomnia with vivid dreams. During withdrawal REM sleep is typically exaggerated as part of a rebound effect.

Other[

Opioid medications such as hydrocodone, oxycodone, and morphine are used for insomnia that is associated with pain due to their analgesic properties and hypnotic effects. Opioids can fragment sleep and decrease REM and stage 2 sleep. By producing analgesia and sedation, opioids may be appropriate in carefully selected patients with pain-associated insomnia. However, dependence on opioids can lead to suffering from long time disturbance in sleep.

The use of low doses of antipsychotics for insomnia, while common, is not recommended as there is little evidence of benefit and concerns regarding adverse effects. Concerns regarding side effects is greater in the elderly.

♥ Alternative medicine

Some insomniacs use herbs such as valerian, chamomile, lavender, cannabis, hops, *Withania somnifera*, and passion-flower. Purified valerian extract has undergone multiple studies and appears to be modestly effective. L-Arginine L-aspartate, *S*-adenosyl-L-homocysteine, and delta sleep-inducing peptide (DSIP) may be also helpful in alleviating insomnia. A 1973 study published in Psychopharmacologia found that orally administered THC significantly reduced sleep latency and frequency of sleep interruptions in 9 healthy subjects. A 20 mg dose of THC was found to be most effective, reducing sleep latency by over an hour on averageA 2010 study published in Anesthesia and Analgesia found that synthetic THC was more effective than the antidepressant amitriptyline at improving sleep quality in patients with fibromyalgia

b. PRIMARY HYPERSOMNIA:

Hypersomnia, or excessive sleepiness, is a condition in which a person has trouble staying awake during the day. People who have hypersomnia can fall asleep at any time; for instance, at work or while they are driving. They may also have other sleep-related problems, including a lack of energy and trouble thinking clearly.

According to the National Sleep Foundation, up to 40% of people have some symptoms of hypersomnia from time to time.

(a) Causes

There are several potential causes of hypersomnia, including:

- The sleep disorders narcolepsy (daytime sleepiness) and sleep apnea (interruptions of breathing during sleep)

- Not getting enough sleep at night (sleep deprivation)
- Being overweight
- Drug or alcohol abuse
- A head injury or a neurological disease, such as multiple sclerosis
- Prescription drugs, such as tranquilizers
- Genetics (having a relative with hypersomnia)

(b) Diagnostic evaluation

- Complete history collection
- Polysomnography.
- blood tests, computed tomography (CT),
- Electroencephalogram (EEG), which measures the electrical activity of the brain, is needed.

Treatment:

- Stimulants, antidepressants, as well as several newer medications (for example, Provigil and Xyrem).
- Continuous positive airway pressure or CPAP. Wear a mask over your nose while you are sleeping. A machine that delivers a continuous flow of air into the nostrils is hooked up to the mask. The pressure from air flowing into the nostrils helps keep the airways open.
- Eliminate alcohol and caffeine.

♣ NARCOLEPSY:

Narcolepsy is a chronic disease of the central nervous system. Excessive daytime sleepiness (EDS) is the main symptom and is present in 100% of patients with narcolepsy. Other primary symptoms of narcolepsy include:

- loss of muscle tone (cataplexy),
- distorted perceptions (hypnagogic hallucinations), and
- Inability to move or talk (sleep paralysis).

Additional symptoms include disturbed nocturnal sleep and automatic behavior (patients carry out certain actions without conscious awareness). All of the symptoms of narcolepsy may be present in various combinations and degrees of severity. Narcolepsy usually begins in teenagers or young adults and affects both sexes equally.

Causes and pathphysiology

. Hypocretin cells are located in a part of the brain called the hypothalamus and they normally secrete neurotransmitter substances (chemicals released by nerve cells to transmit messages to other cells) called hypocretins.

Abnormalities in the hypocretin system may be responsible for the daytime sleepiness and abnormal REM sleep found in narcolepsy. People with narcolepsy have been found to have a markedly decreased number of hypocretin nerve cells in the brain. They also have a decreased level of hypocretins in the cerebrospinal fluid (the fluid that surrounds the brain and the spinal cord).

Narcolepsy is associated with a specific type of human leukocyte antigen (HLA). HLAs are genetically determined proteins on the surface of white blood cells. They are a part of the body's immune (defense) system

It is theorized that an autoimmune reaction causes the loss of nerve cells in the brain in patients with narcolepsy. The environment (for example, infection or trauma) might trigger an autoimmune reaction where normal brain cells are attacked by the body's own immune system. As a result, the neurons are damaged and ultimately destroyed, and they and their neurotransmitter chemicals disappear. Whether narcolepsy is an autoimmune disease remains to be proven.

The role of heredity in humans with narcolepsy is not completely understood.

(c) Diagnostic evaluation

The diagnosis of narcolepsy is based on a clinical evaluation, specific questionnaires, sleep logs or diaries, and the results of sleep laboratory tests.

- **Clinical evaluation**

Clinical evaluation includes a detailed medical history and physical.

examination

- **Questionnaires**

. The Stanford Narcolepsy Questionnaire is an extensive questionnaire that can provide the physician with valuable information on all symptoms of narcolepsy, but especially on cataplexy. The Epworth Sleepiness Scale is a brief self-administered questionnaire that provides an estimate of the degree of daytime sleepiness. A person

rates the likelihood of falling asleep during specific activities. Using the scale from 0-3 below, the person ranks their risk of dozing in the chart below.

0 = Unlikely to fall asleep
1 = Slight risk of falling asleep
2 = Moderate risk of falling asleep
3 = High likelihood of falling asleep

Situation	**Risk of Dozing**
Sitting and reading	
Watching television	
Sitting inactive in a public place	
As a passenger in a car riding for an hour, no breaks	
Lying down to rest in the afternoon	
Sitting and talking with someone	
Sitting quietly after lunch, without alcohol	
In a car, while stopped for a few minutes in traffic	

After ranking each category, the total score is calculated. The range is 0-24, with the higher the score the more sleepiness.

Scoring:

- 0-9 = Average daytime sleepiness
- 10-15 = Excessive daytime sleepiness
- 16-24 = Moderate to severe daytime sleepiness

- **Sleep logs or sleep diaries**

Sleep logs or sleep diaries for two to three weeks are recommended in the evaluation of any patient with excessive daytime sleepiness. Sleep diaries record the patient's usual sleep patterns (sleep deprivation, irregular sleep/wake pattern, interrupted sleep), alcohol and/or drug use, and common behaviors that cause the patient to lose sleep (for example, Internet syndrome - surfing the Internet until late at night, causing sleep deprivation and daytime sleepiness.) This information may be helpful in the evaluation of a patient with excessive daytime sleepiness.

- **Sleep laboratory tests**

Sleep laboratory tests ("sleep studies") for narcolepsy include polysomnography (PSG) and the multiple sleep latency test (MSLT).

Polysomnography (PSG) is a full night recording of several different physiological factors of a patient's sleep.

The multiple sleep latency test (MSLT), which is a recording of the patient's tendency to fall asleep during the day. These procedures provide objective measures of daytime sleepiness and REM sleep abnormalities.

In healthy individuals, the SL time is more than 10 minutes, whereas in narcolepsy, it could be as short as 0.5 minutes (an almost immediate onset of sleep).

- **Maintenance of wakefulness test (MWT)**

Maintenance of wakefulness test (MWT) may be used to evaluate the effects of the treatment for narcolepsy. This test is a recording that measures the ability of a subject to stay awake during the day. .

- **The blood test for a type of HLA**

The blood test for a type of HLA (Human Leukocyte Antigen) has been observed to have a very high association with narcolepsy. Certain types of HLA are part of an individual's genetic or hereditary makeup and can be characteristic of certain conditions, especially autoimmune diseases. The particular HLA type associated with narcolepsy is not unique for this condition as it is also found in 20% of the general population. Therefore, HLA typing should not be used for the diagnosis of narcolepsy

(d) Treatment:

(e) The treatment of narcolepsy includes drug and behavioral therapies.

(f) Medications

The types, number, and severity of the symptoms determine which drugs are used to treat the narcolepsy.

- Severe daytime sleepiness may require treatment with high doses of stimulant medication, and sometimes a combination of stimulants may be needed.

- Rare or infrequent cataplexy and other associated symptoms may not require any drug treatment, or treatment on an "as needed" regimen may be adequate.
- Insomnia and depression may also require treatment.
- Therapy should be catered to the individual needs of the patient.

For example, improved alertness may be critical throughout the day for most students and working adults, but may be critical only at certain times of the day (for example, driving times) for other people.

Alerting medications are used for the treatment of excessive daytime sleepiness.

Amphetamines and methylphenidate (Ritalin) are generalized central nervous system stimulants. These medications are used in narcolepsy to decrease sleepiness and improve alertness.

Pemoline (Cylert) is used as an alerting medication but it is less effective than traditional stimulants. This drug has the potential risk of toxic side effects on the liver and liver blood tests need to be monitored frequently.

Modafinil (Provigil), Modafinil is not a general CNS stimulant like amphetamines, but the precise way it works is unknown. This drug has a much lower risk for high blood pressure and mental side effects because it acts in a different way than classic stimulants. It does not have significant effects on the sympathetic nervous system and does not cause mood changes, euphoria, or dependence. Furthermore, modafinil does not become ineffective with prolonged use

Armodafinil (Nuvigil): Approved by the FDA in June 2007, is an oral drug used to promote wakefulness. Armodafinil may work by increasing the amount of dopamine

(a chemical neurotransmitter that nerves use to communicate with each other) in the brain by reducing the reuptake of dopamine into nerves.

Monoamine oxidase inhibitors (MAOIs): A class of antidepressants called monoamine oxidase inhibitors (MAOIs) can also be used for treatment of excessive daytime sleepiness. This includes phenelzine (Nardil) and selegiline (Eldepryl).

Anticataplectic medication is the general name for drugs that are used to treat cataplexy. These drugs may also be used for the other REM related symptoms, such as hypnagogic hallucinations and sleep paralysis. Tricyclic antidepressants (TCAs), used in lower than antidepressant doses, are often effective in controlling cataplexy.

Selective serotonin reuptake inhibitors (SSRIs) are also useful in treating cataplexy at doses that are comparable to those used to treat depression. The most frequently used are fluoxetine (Prozac), paroxetine (Paxil), sertraline (Zoloft), citalopram (Celexa), and venlafaxine (Effexor).

Sodium oxybate (Xyrem), also known as gamma-hydroxybutyrate or GHB, was approved by the FDA in 2002 to treat cataplexy, and in 2005 was also approved to treat excessive daytime sleepiness (EDS).

♣ IDIOPATHIC HYPERSOMNIA:

A chronic neurological disease similar to narcolepsy in which there is an increased amount of fatigue and sleep during the day. Patients who suffer from idiopathic hypersomnia cannot obtain a healthy amount of sleep for a regular day of activities. This hinders the patients' ability to perform well, and the patient has to deal with this for the rest of their lives.

c. SLEEP APNEA SYNDROME:

Sleep apnea is characterized by cessation of breathing for 10 seconds or longer occuring at least 5 times / hour. Sleep apnea can be classified as obstructive and central nervous system apnea. A combination of the two may be seen.

- **OBSTRUCTIVE SLEEP APNEA SYNDROME:** In Obstructive Sleep apnea syndrome, respiratory efforts of the diaphragm and intercostals muscles are apparent but ineffective against a collapsed or obstructed upper airway. Snoring indicates partial obstruction. As hypoxia ensues; the person eventually awakens to breathe. The frequent awakenings impair the normal sleep cycle. Repeated micro arousals lead to daytime sleepiness.

  Women are less likely than men to develop Obstructive Sleep apnea syndrome, particularly before menopause. It is common among males who are obese with short, thick necks, and who are heavy snorers. A much smaller percentage progresses to the classic pickwickian syndrome, characterized by obesity, severe sleep apnea, daytime hypercapnea, and cor pulmonale.

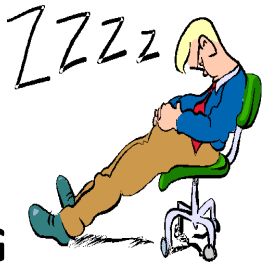
  The application of continuous positive airway pressure (CPAP) by means of a face mask covering the nose is the treatment of choice for clients with moderate to severe Obstructive Sleep apnea syndrome. The CPAP device provides room air under increased pressure, essentially providing a pressure splint to keep the upper airway open. It should be turned on whenever the client is ready to go to sleep and should be maintained throughout the sleep period. Clients may experience nasal congestion, air leak, pressure marks on the face, or pressure intolerance. People who use CPAP regularly should bring their units to the hospital with them. These clients need to be

monitored when recovering from anesthesia, and when receiving narcotics because they are at risk for developing ineffective breathing patterns.

Uvulopalatopharyngoplasty is a common surgical procedure for reducing snoring. Resecting the uvula, the posterior part of the soft palate, tonsils and any excessive pharyngeal tissue, can reduce the propensity to obstruction. Tracheostomy may be required in severe Obstructive Sleep apnea syndrome.

- **CENTRAL SLEEP APNEA SYNDROME:** it is characterized by apneic periods during which no apparent respiratory effort occurs. It may be seen in stroke and brain stem involvement, but it is most commonly mixed with Obstructive Sleep apnea syndrome. Cheyne- stokes respirations are common, and CPAP is the usual treatment.

d. SNORING



Primary snoring is distinguished from Obstructive Sleep apnea syndrome by its rhythmic nature without episodes of apnea or hypoventilation

e. RESTLESS LEG SYNDROME:

Restless leg syndrome involves anything “crawling”, itching or tingling sensations of the leg while at rest and causes an almost irresistible urge to move. The syndrome is often most severe before sleep onset. Clients always have periodic limb movements during sleep. Treatment is similar to that of Periodic limb movement disorder.

f. PERIODIC LIMB MOVEMENT DISORDER

It may also contribute to daytime sleepiness and frequent nocturnal wakening. Originally described as nocturnal myoclonus, it is characterized by periodic episodes of repetitive, stereotypic leg movements that occur during sleep, causing partial arousals. It is common in the elderly population. Clonazepam, a benzodiazepine, or baclofen, a skeletal muscle relaxant, may be ordered to diminish the magnitude of the movement and frequency of arousals. For some clients the use of transcutaneous electrical nerve stimulation (TENS) before sleep has been helpful.

g. CIRCADIAN RHYTHM SLEEP DISORDERS

In the general population, the Circadian rhythm sleep disorders, such as ***time zone change syndrome*** and ***shift work sleep disorder*** are not uncommon. Elderly and chronically ill clients who live alone may be vulnerable to irregular sleep- wake patterns. In this disorder, prolonged ignoring or absence of external cues to time, such as regular meal timings, work periods and daylight leads to erratic periods of sleeping and wakefulness. Internal circadian cues may also be damped as a result of ageing or diffuse brain disease. .

♣ DELAYED SLEEP PHASE SYNDROME (DSPS)

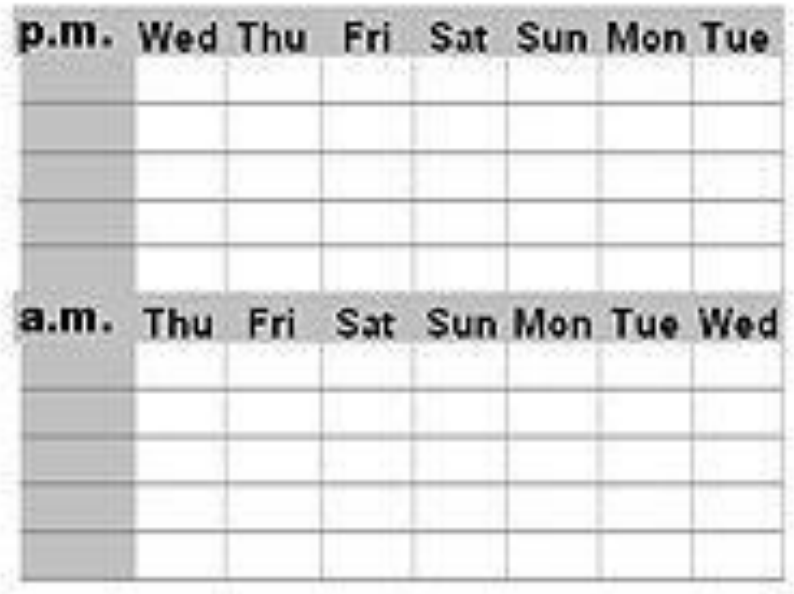
It is a disorder in which the major sleep episode is delayed by 2 or more hours of the desired bedtime. This causes difficulty awakening at the desired time.

Symptoms

- Complaint of insomnia or excessive sleepiness
- inability to fall asleep at the desired time
- inability to wake up at the desired time
- Depression may be present
- This sleep pattern has been present for 3 months .

Section I.02 Diagnosis

Sleep dairy



A **sleep diary** with nighttime in the middle and the weekend in the middle, the better to notice trends.a sleep diary kept by the patient for at least three weeks.

When polysomnography is also used, it is primarily for the purpose of ruling out other disorders such as narcolepsy or sleep apnea. If a person can, on her/his own with just the help of alarm clocks and will-power, adjust to a daytime schedule, the diagnosis is not given.

Treatment

- Improve sleep hygiene habits
- Bright Light Therapy
- Chronotherapy
- Melatonin or other natural sleep inducers

- **Bright Light Therapy**

Bright light therapy takes total control of light and dark exposure across the whole day. The patient uses bright light exposure early in the morning and avoids light in the evening. This should produce a phase advance. Two hours (upon rising in the early morning) in front of a light box that emits 2500 lux will usually produce and increase in alertness in one week.

- **Chronotherapy**

Chronotherapy is a behavioral technique in which bedtime is systematically delayed, which follows the natural tendency of human biology. Bedtime is delayed by 3 hour increments each day, establishing a 27-hour day. The procedure is maintained until the desired bedtime is reached, (say 11 p.m.) when the normal 24-hour day is then established.

2. **PARASOMNIAS:**

The Parasomnias are disorders that occur during sleep but that usually do not produce insomnia or excessive sleepiness. It may be due to partial arousal or abnormalities in sleep-wake transition.

a. REM SLEEP BEHAVIOR DISORDER

A neurological disorder in which a person does not become paralyzed during REM sleep, and acts out dreams his / her dreams. It is a neurological illness in 50% of affected persons. Clonazepam is often given to treat this disorder.

b. SLEEP TERROR:

Sleep terror, also known as a night terror or *pavor nocturnus*, is a parasomnia disorder characterized by extreme terror and a temporary inability to regain full consciousness. The subject wakes abruptly from slow-wave sleep, with waking usually accompanied by gasping, moaning, or screaming while waking. It is often

impossible to awaken the person fully because they are so concentrated on waking, and after the episode the subject normally settles back to sleep without waking.

Sleep Terrors Symptoms:

Sudden awakening from sleep, persistent fear or terror that occurs at night, screaming, sweating, confusion, rapid heart rate, inability to explain what happened, usually no recall of "bad dreams" or nightmares, may have a vague sense of

frightening images. Many people see spiders, snakes, animals or people in the room, are unable to fully awake, difficult to comfort, with no memory of the event on awakening the next day.

Diagnosis

The diagnosis of night terrors is usually made by the history of a child 'waking' early in the night screaming and being inconsolable. Night terrors are most often confused with nightmares, but unlike night terrors, a child having a nightmare is usually easily woken up and comforted.

The other worry for many parents is that these episodes are a type of seizure. Although different types of partial seizures, including temporal lobe and frontal lobe epilepsy, can appear similar to night terrors, they are usually brief (30 seconds to a few minutes) and are more common in older children and adults.

Treatments

No treatment is usually necessary for routine night terrors. Since they are often triggered in children who are overtired, sticking to a good bedtime routine and making sure your child is getting enough rest can help to prevent them.

For children who get frequent night terrors, it might help to wake your child up before the time that he usually has a night terror. This is thought to interrupt or alter

the sleep cycle and prevent night terrors from occurring (it also works for sleepwalking).

c. SLEEP WALKING (SOMNAMBULISM)

- There is a repeated episode of rising from bed during sleep and walking about.
- While sleep walking patient has a blank staring face; is relatively unresponsive of others to communicate with him/ her, and can be awakened only with great difficulty.
- On walking the person has amnesia.
- Within several minutes after awakening from sleep walking episode. There is impairment mental activity, or behavior. (may be a period of confusion or disorientation)
- Sleep walking causes clinically significant distress.
- It occur in 3 & 4 sleep
- It is more prevalent in children
- It occurs more often in females during childhood & occurs mostly in males in adulthood.

d. BRUXISM

Bruxism (from the Greek βρυγμός (*brugmós*), "gnashing of teeth") is characterized by the grinding of the teeth and is typically accompanied by the clenching of the jaw. It is an oral parafunctional activity that occurs in most humans at some time in their lives. In most people, bruxism is mild enough not to be a health problem.[1] While bruxism may be a diurnal or nocturnal activity,[2] it is bruxism

during sleep that causes the majority of health issues and can even occur during short naps. Bruxism is one of the most common sleep disorders.[3]

Symptoms,

- Anxiety, stress, and tension
- Depression
- Earache
- Eating disorders
- Headache
- Insomnia
- Sore or painful jaw

Treatments and drugs

Therapies

Stress management. If you grind your teeth because of stress, you may be able to prevent the problem with professional counseling or strategies that promote relaxation, such as exercise and meditation. If your child grinds his or her teeth because of tension or fear, it may help your child to talk about his or her fears just before bed or to relax with a warm bath or a favorite book.

Dental approaches. If you or your child has bruxism, your doctor may suggest a mouth guard or protective dental appliance (splint) to prevent damage to the teeth.

Splints are usually constructed of hard acrylic and fit over your upper or lower teeth. Some dentists may make them right in the office, while others may send them to a laboratory to be made.

Mouth guards are available over the counter and from your dentist. Your dentist can make a custom mouth guard to fit your mouth. Mouth guards are less expensive than splints, but they generally don't fit well and can dislodge during teeth grinding.

Correcting misaligned teeth may help if your bruxism seems to be associated with dental problems. In severe cases — when tooth wear has led to sensitivity or the inability to chew properly — your dentist may need to use overlays or crowns to entirely reshape the chewing surfaces of your teeth. Reconstructive treatment can be quite extensive and though it will correct the wear, it may not stop the bruxism.

Behavior therapy. Once you discover that you have bruxism, you may be able to change the behavior by practicing proper mouth and jaw position. Concentrate on resting your tongue upward with your teeth apart and your lips closed. This should keep your teeth from grinding and your jaw from clenching.

If you're having a hard time changing your habits, you may benefit from biofeedback, a form of complementary and alternative medicine that uses a variety of monitoring procedures and equipment to teach you to control involuntary body responses.

During a biofeedback session, electrical sensors are applied to different parts of your body. These sensors monitor your body's physiological responses to stress — such as teeth grinding — and then feed the information back to you via auditory and visual cues. These cues may take the form of a beeping sound or a flashing light. With this feedback, you'll start to associate teeth grinding or clenching with stress and learn to change your behavior. You may also be given a portable biofeedback device that you use at home.

Medications

In general, medications aren't very effective for treatment of bruxism. In some cases, your doctor may suggest taking a muscle relaxant before bedtime. If you develop bruxism as a side effect of an antidepressant medication, your doctor may change your medication or prescribe another medication to counteract your bruxism. Botulinum toxin (Botox) injections may help some people with severe bruxism who haven't responded to other treatments.

e. BED WETTING

Sleep enuresis, or bed wetting, may occur in adult in association with other disorders, such as Obstructive Sleep apnea syndrome.

f. SLEEP TALKING (SOMNIOLOQUY):

The talking usually involve few words that are difficult to distinguish long episode of talking involve the sleeper's life and concern , but sleep talker do not relate their dream during sleep , nor do they often reveal deep secrets. Episode of sleep talking sometime accompany night terrors and sleep waking .It is common in children and adult and it requires no treatment.

g. NIGHTMARES

A nightmare is a dream occurring during rapid eye movement (REM) sleep that arouses feelings of intense, inescapable fear, terror, distress, or extreme anxiety that usually awakens the sleeper.

(a) Description of Nightmares

A nightmare is a vivid, frightening dream that usually results in the dreamer waking up with full or partial recall of the dream itself.

Nightmares can be recalled afterward and are accompanied by much less anxiety and movement. These frightening dream experiences, which tend to occur at times of insecurity, emotional turmoil, depression, or guilt, can occur in all age groups.

Nightmares occur exclusively during REM sleep. REM sleep phases grow longer in the latter part of the sleep cycle, and the majority of nightmares occur from the middle of the night onward.

(b) Causes and Risk Factors of Nightmares

Particularly among adults, prescription drugs such as levedopa, reserpine, beta blockers, and antidepressants, as well as withdrawal from addictive drugs, all can provokenightmares. Heavy drinking also is strongly associated with nightmares.

Other drugs suspected of causing nightmares include heart drugs, antibiotics such as ciprofloxacin, antihistamines, appetite suppressers such as fenfluramine, antidepressants, Parkinson's drugs such as levodopa, and ulcer drugs (cimetidine).

It is also caused by unresolved psychological conflicts or traumatic events. They are a frequent feature ofpost-traumatic stress disorder. Emotional traumas that disturb the sleep of children can be overlooked easily by adults - such as the loss of a favorite toy or overhearing a loud argument between parents.

(c) Diagnosis of Nightmares

Diagnosis will be based upon history and the absence of any underly inorganic problems

Treatment

- psychotherapy to pinpoint major life stressors, past traumatic events and depression that might be causing bad dreams.
- If one is taking medications, it is advisable to ask the prescribing physician if the pills might be the culprit.
- Chronic nightmares have also been treated by a desensitization method that uses instruction about rehearsal of the nightmare and the imagining of a different ending.
- In one study, patients were instructed to select a recent nightmare and write it down, change the nightmare in any way they wished, write down the changed version and rehearse the changed nightmare in an imagery relaxed state. Patients were instructed to rehearse the changed version once a day for three consecutive days after each nightmare or until the nightmare went away.
- It was concluded that the use of desensitization or rehearsal techniques can reduce the frequency of nightmares and decrease distress.