



IMPACT OF SLEEP DISORDERS ON ELDERLY

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ABSTRACT Sleep is a fundamental necessity that is required by all of us. Sleep requirements vary with age and between individuals but in general the average requirement for a healthy adult is between seven to eight hours of sleep per night. Most of people thought sleep as a passive, dormant part of our daily lives but it is as essential as food and water. Sleep deprivation have unpleasant effects on work, social and family life and negative impact on mood, energy and concentration. Insufficient sleep always associated with a number of chronic diseases and conditions such as diabetes, cardiovascular disease, obesity and depression. Most of people occasionally experience sleeping problems due to stress, hectic schedules and other outside influences. When these issues begin to occur on a regular basis and interfere with daily life they may indicate a sleeping disorder.

KEYWORDS :

Sleep Cycle

It is a regular rhythm between the slow-wave and REM phases of sleep. It follows a pattern of alternating REM and NREM throughout sleep period. The complete sleep cycle repeats about every 90-110 minutes.

Stages of Sleep:

1. NREM (Non-rapid eye movement): 75% of sleep falls. It comprised of 4 stages

Stage 1 Light sleep which can be awakened easily.	Stage 2 Slow sensation, awareness of surroundings fades, breathing and heart rate are regular, body temperature drops.	Stage 3 and 4 Difficult to awake, deep sleep, blood pressure drops and breathing slows, muscles relax as circulation to muscles increases, energy restored.
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2. REM (Rapid eye movement):

25% of sleep falls. It usually occur about 70 to 90 minutes after we fall asleep. As the night progresses REM sleep periods increase in length and deep sleep decreases, body becomes immobile, muscles completely relaxed, eyes move back and forth rapidly and Brain is active dreams occur.

Involvement of Neurotransmitters in sleep:

There are number of neurotransmitters involved in sleep-wake cycle. Histaminergic, Nor-adrenergic and Serotonin helps to promote awake state. Adenosine is a mediator of non-REM sleep. Dopamine help transition from sleep to wakefulness. Gamma-aminobutyric acid (GABA) induces relaxation and sleep. Melatonin regulates the circadian rhythm of sleep. Orexins produced in hypothalamic neurons, have an important role in regulating the sleep-wake cycle.

Classification of Sleep Disorders:

They are insomnias, hypersomnias, sleep apnoea, narcolepsy and cataplexy, restless legs syndrome, sleep walking, sleep terrors and nightmare disorder.

1. Insomnia

Insomnia is an inability to get the amount of sleep needed to function efficiently during the daytime. Problems may include difficulty in falling asleep, difficulty in staying asleep or early morning waking which can lead to fatigue and impairment of cognitive function during waking hours. Insomnia is a common symptom of many mental disorders including mania and depression and also present in physical conditions such as pain and asthma. Insomnia affects around 20 per cent of the adult population. It leads to a significant impairment in quality of life and affects the functioning and mental health of affected people.

2. Hypersomnia

It is characterized by excessive daytime sleepiness or daytime sleep episodes that cause severe distress or impairment in functioning and occur almost daily. Excessive daytime sleepiness can occur with any sleep disorder that causes a loss of night-time sleep.

3. Narcolepsy and cataplexy

Narcolepsy is characterized by "sleep attacks" that occur during the day. This means that you will suddenly feel extremely tired and fall asleep without warning. People who have hypersomnia can fall asleep at any time for instance, at work or while they are driving.

Cataplexy is a sudden and transient loss of muscle tone while awake, usually triggered by strong emotions such as surprise or laughter leading to knee buckling.

4. Obstructive sleep apnoea

The most common sleep-related breathing disorder is obstructive sleep apnoea occurring in approximately 3-7 per cent of men and 2-5 per cent of women. It is more likely to occur in patients with cardiac or metabolic disorders, obesity, upper airway abnormalities. It is characterized by loud snoring, followed by apnoea (a period of silence, when breathing ceases due to complete airway obstruction), which can last up to 90 seconds.

5. Restless legs syndrome

Restless legs syndrome is a neurological disorder associated with pain or paraesthesia in the legs that is temporarily relieved by movement. It also called Willis-Ekbom disease. It occurs more frequently in women and those over 65 years of age. Restless legs syndrome expresses a circadian rhythm being worse in the evening and at night and easing in the morning. It is caused by a decrease in dopamine function in the CNS.

6. Nightmare disorder

It is characterized by repetitive, frightening dreams, occurring during REM sleep which led to the patient waking and becoming fully alert. 2% - 5% of adult population suffers from frequent nightmares and these may be idiopathic or part of posttraumatic stress disorder (PTSD).

7. Sleep behavior disorder

It occurs when there is a loss of the muscle atonia that normally occurs in REM sleep. This leads to motor activity, generally in response to a nightmare of being attacked or chased. It can lead to accidental injury to oneself or one's partner. It is more common in older males and maybe a prodromal symptom of a neurological disease such as Parkinson's disease or Lewy body dementia.

8. Sleep terror disorder (night terrors)

It is characterized by episodes of disruption of sleep that usually begin with a fearful scream or cry. There may be signs of arousal such as

sitting up in bed with the eyes open, increased heart rate, rapid breathing and sweating but the individual remains in a deep sleep. It is more common in boys.

9. Sleep walking disorder

Sleepwalking also known as somnambulism, is a behavior disorder that originates during deep sleep and results in walking while asleep. It is not a serious disorder although people can be injured during sleepwalking. It is more common in children than adults and is more likely to occur if a person is sleep deprived. It may be associated with a sleep related breathing disorder, hyperthyroidism, personality disorder, mood disorder or anxiety disorder

10. Circadian Rhythm Disorders

It is a condition that may result when an individual's internal biological clock is out of sync with external time cues including the natural dark-light cycle. This may occur in total blindness with shift work or jet lag or due to advanced or delayed sleep phase syndrome.

Causes of Sleep Disorders

There are many conditions, diseases and disorders that can cause sleep disturbances.

1. Allergies and Respiratory Problems

Allergies, colds and upper respiratory infections makes difficult to breathe at night. Inability to breathe through your nose can also cause sleeping difficulties.

2. Nocturia

Nocturia or frequent urination may disrupt sleep by causing to wake up during the night. Hormonal imbalances and diseases of the urinary tract may responsible for this condition.

3. Chronic Pain

Constant pain can make it difficult to fall asleep. It might awake you up after you fall asleep. Some of the most common causes of chronic pain include- arthritis, chronic fatigue syndrome, fibromyalgia, inflammatory bowel disease, persistent headaches and continuous lower back pain

4. Stress and Anxiety

Stress and anxiety often have a negative impact on sleep quality. It can be difficult for you to fall asleep or to stay asleep.

Symptoms of Sleep Disorders

General symptoms of sleep disorders include:

- Difficulty falling or staying asleep
- Daytime fatigue
- Strong urge to take naps during the day
- Irritability or anxiety
- Lack of concentration
- Depression

Diagnostic Tests for Sleep Disorders

1. Overnight Oximetry

It involves the use of a probe (similar to a clothespin) that is worn on the finger or earlobe which continuously measures oxygen levels and heart rate. This is accomplished with a red light and sensor that detects changes in the color of blood that may suggest desaturations are occurring.

2. Polysomnography (PSG)

It involves a sleep center which consists of specially designated rooms in a hospital or sleep laboratory. This involves an overnight stay which is monitored by a trained technician.

3. Titration Study

Titration with Continuous Positive Airway Pressure (CPAP) is commonly done with diagnostic polysomnogram (PSG) to save waiting time, minimize cost to the patient and treat sleep apnea as soon as possible.

4. Multiple Sleep Latency Testing (MSLT)

It is often called a nap study. In this a patient is put to bed and allowed to lie there for 20 minutes with the goal of falling asleep. A technician will monitor for the onset of sleep and REM sleep. After 20 minutes the person will be awakened or told that the time for a nap has ended. Then in two-hour intervals this process is repeated. Typically these will occur over a 10-hour period.

5. Actigraphy

Actigraphy is the measurement of activity with the use of a small wristwatch-sized device. This device monitors movement and can be used to assess sleep-wake cycles or circadian rhythms over an extended period of time. They may be worn for weeks or even months.

6. Sleep Diary

It is a paper record of sleep and wakefulness over a period of weeks and months. The bedtimes and wake-times are noted. Any periods of wakefulness during the night or naps during the day are also documented. Sometimes the use of caffeine, alcohol or medications may also be recorded.

7. Genetic blood testing

A blood test commonly used to diagnose narcolepsy and other underlying health conditions that might be causing sleeping problems

Treatment for sleep disorders

It generally includes a combination of medical treatments and lifestyle changes.

Medical Treatment

Medical treatment for sleep disturbances might include any of the following:

- Sleeping pills
- Melatonin supplements
- Allergy or cold medication
- Medications for any health issues
- breathing device or surgery (usually for sleep apnea)
- A dental guard (usually for teeth grinding)

Lifestyle Changes

- Set up bedtime routine, go to bed and get up at the same time every day and avoid daytime naps.
- Take regular exercise during the day but avoid strenuous exercise within four hours of bedtime.
- Take time to relax before getting into bed. Do something you enjoy, like reading, taking a warm bath or using other relaxation techniques can reduce stress and quiet your mind for sleep?
- The bedroom should be a quiet, relaxing place to sleep, make sure the room is not too hot or too cold.
- Avoid stimulants such as caffeine, nicotine, chocolate and alcohol six hours before bedtime.
- If you share your room or bed with someone who is restless, snores, keeps the light on late for reading or steals your covers, make arrangements to sleep separately until you establish a regular sleeping pattern.
- Don't use your bedroom for working, having discussions, watching TV or using your computer?
- Avoid too much mental or physical stimulation an hour or before going to bed.
- Avoid large/heavy meal, eat smaller low carbohydrate meals before going to bed.
- Do not watch TV or listen to music when going to bed?
- Move the clock away from your bed so you can't see it easily.