Effects of Sleep Deprivation in College Students

Ms. Neha Sharma

ABSTRACT

The body requires adequate sleep in order to maintain good physiological health, psychological health and cognitive function. It helps keep your mind and body healthy. Today prolonged wakefulness is a widespread phenomenon; sleep deprivation is one of the reasons of wakefulness. Sleep deprivation can affect health, well-being and ability to do daily activities. In healthcare settings, adequate sleep is essential to ensure optimal patient care, otherwise leads to procedural errors. As sleep deprivation affects cognitive function resulting in poor academic performance. Identifying and to combat sleep deprivation phenomenon in college students key objectives. In order to assist students, you must comprehend the nature of sleep, the variables affecting it, and their sleeping patterns. Students need tailored strategies based on their unique behaviors, sleeping cycles, and sleep-related issues.

Keywords: Sleep, sleep deprivation, NREM, REM, Circadian rhythm

Introduction

As critical to health as a balanced diet and regular exercise are enough rest and sleep. Ability to meet these fundamental human needs is a prerequisite for both physical and emotional wellness. Nearly one third of our life is spent in sleep. Every day we go to our beds and pass into an easily reversible state of relative unresponsiveness and serenity. This state occurs more or less regularly and repetitively each day. Individual needs different amount of sleep. Sleep deprivation occurs when an adequate amount of sleep is not being maintained. Sleep deprivation is very common in college students. It is found that up to 60% of all college students suffer from poor sleep quality. Over time sleep deprivation can negatively affect a person's physiological health, psychological health and cognitive function. Therefore it is important to evaluate how sleep affects the body and look into ways to combat the issue of sleep deprivation.

Sleep

Sleep can be regarded as a physiological reversible reduction of conscious awareness. - R Sreevani: A guide to mental health and psychiatric nursing

Sleep is a cyclical physiological process that alternates with longer periods of wakefulness. - Potter & Perry's: Fundamental of nursing

Sleep is a normal neurophysiologic phenomenon. -Dr MS Bhatia: A textbook on psychiatric nursing

Physiology of Sleep

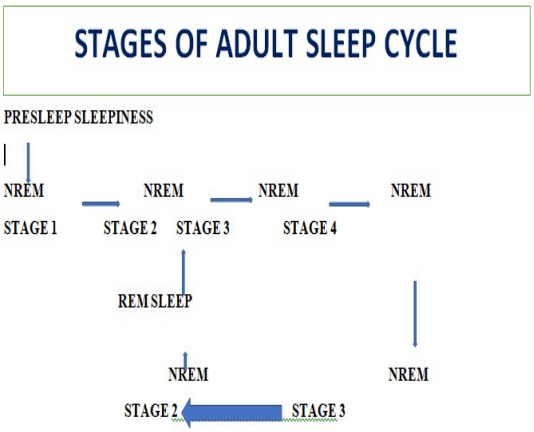
The sleep-wake cycle affects and controls behavioural and physiological responses. People regularly encounter cyclical rhythms in their daily lives. The 24 hour, day and night cycle, also referred to as the diurnal or circadian rhythm, is the most well-known rhythm. The hypothalamus regulates the sleep-wake pattern and synchronises it with other circadian rhythms. Circadian rhythm and the daily cycle of sleep and wakefulness are influenced by factors like light, temperature, social activities, and job schedules. The biological clocks in everyone's bodies synchronise their sleep patterns. This explains why some people go to bed at 8 p.m., while others stay up until the wee hours of the morning or later. Other physiological processes typically shift when the sleep-wake cycle is disturbed. Common signs of sleep cycle abnormalities include anxiety, restlessness, irritability, and poor judgement. An individual's general health is negatively impacted by breaking their regular sleep-wake cycle.

Stages of Sleep

Rapid eye movement (REM) and non-rapid eye movement (NREM) sleep are the two phases of normal sleep.

During a typical 90-minute sleep cycle, a sleeper travels through four stages of NREM. The difference in sleep quality between stages 1 and 2, when a person is more readily awakened. Slow wave sleep, a deeper stage of sleep, is experienced in stages 3 and 4. The final stage of each sleep cycle is REM sleep.

[1]*Nursing Tutor, Department of Fundamentals,Faculty of Nursing Rama University, Mandana, Kanpur*



Sleep Cycle

Adults typically have a pre-sleep phase before falling asleep, during which they are simply conscious of their increasing sleepiness. This time typically lasts between 10 and 30 minutes, but if a person has trouble falling asleep, it can last up to an hour. After falling asleep, the individual typically has 4 to 5 full cycles every night, each of which includes 4 stages of NREM sleep and a period of REM sleep. Every cycle lasts roughly 90 to 100 minutes. The NREM cycle pattern typically progresses from stage 1 through stage 4, then reverses from stage 4 to stage 3 to stage 2, concluding with a REM sleep phase. NREM sleep accounts for 75–80 percent of total sleep time

Functions of Sleep

Sleep's function is still not entirely clear. It helps with both physical and psychological recovery. People who sleep for 7-9 hours a day have been found to have much lower risks of disease. It has been observed that there is a decrease in the metabolic rate during night sleep by 5-25%. So, conservation of energy appears to be an important function of sleep. It also serves a restorative function for the whole body (particularly during the NREM sleep) and for the brain (cognitive functions, especially during the REM sleep).

Sleep Deprivation

A person experiences sleep deprivation when they don't get enough sleep. Although everyone has different sleeping needs, most adults require about 7-8 hours of sleep every night on average to feel rested and alert. Teenagers often require 9 hours of sleep per night.

Prevalence

About one in 5 adults fail to get enough sleep.

Causes of Sleep Deprivation

Not getting enough sleep is the most common cause of sleep deprivation. Other causes include-

1. Poor sleeping habits
2. Circadian rhythm disturbance (eg. Delayed sleep phase syndrome, jet lag when travelling across multiple time zones, late shift work)
3. Sleep deprivation like insomnia, restless leg syndrome and sleep apnea
4. Use of medications or drugs
5. Work hours- the work hours required by some occupation can produce sleep deprivation.

In children and teens, causes of sleep deprivation can also include-

1. The onset of puberty
2. Large adenoids and tonsils, which can cause breathing problems during sleep
3. Physiologic shift in sleep onset to later times of the night
4. Disorder such as Attention deficit hyperactivity disorder (ADHD) or autism spectrum disorder.

Common Signs and Symptoms of Sleep Deprivation

1. Feeling sleepy during the day, especially while performing quiet activities like watching TV or reading
2. Changes in mood (irritability, depressed mood)
3. Forgetfulness and difficulty in learning new concepts
4. Inability to concentrate or focus on a task
5. Weight gain

Effects of Sleep Deprivation on Body

The primary effect of sleep deprivation is excessive daytime sleepiness. A sleep deprived person is likely to fall asleep when forced to sit still in a quiet or monotonous situation, such as during a meeting or class. This degree of severe sleepiness can be a safety hazard, causing drowsy driving and workplace injuries.

The other effects of sleep deprivation are widespread-

1. Mood

- Irritability
- lack of motivation
- anxiety
- symptoms of depression

2. Performance

- lack of concentration
- attention deficits
- reduced vigilance
- longer reaction times
- distractibility
- lack of energy
- fatigue
- restlessness

- lack of coordination
- poor decisions
- increased errors
- forgetfulness

3. Health

Sleep deprivation has been associated with an increased risk of these medical conditions-

- high blood pressure
- heart attack
- obesity
- diabetes

Treatment of Sleep Deprivation

The mainstay treatment of sleep deprivation is to increase night sleep time. The following strategies may provide a short- term benefit to reduce the effects of sleep deprivation. They are not a long term solution, however, and they may not restore alertness and performance to non- sleep derived level.

1. **Caffeine:** It is arguably the most commonly ingested stimulant. It can provide improved alertness and performance at doses of 75mg to 150mg after acute sleep restriction. Higher doses are required to produce a benefit after a night or more of total sleepless frequent use of caffeine can lead to tolerance and negative withdrawal effects.
2. **Sleep prior to deprivation:** Getting extra sleep before a period of sleepless, known as "prophylactic nap" may decrease some of the negative performance and alertness effects.
3. **Naps during Deprivation:** During a period of sleep loss a brief nap of 30 minutes or less may boost alertness.
4. **Caffeine and A Nap:** The beneficial effects of naps and caffeine may be additive, the combination of a nap prior to sleep deprivation with caffeine use during sleep deprivation can provide improved alertness over a longer period.
5. **Other Stimulants:** Amphetamines, methylphenidate, modafinil.

Conclusion

Sleep deprivation and poor sleep quality are particularly prominent in college students. Research shows that there is a relationship between poor sleep quality and lower academic performance. Sleep loss results in a preference for cognitive tasks demanding minimal effort so that adequate performance can be maintained. Sleep may also affect extracurricular and vocational choices of at least some sleep deprived students. Better sleep habits can lead to a long term healthier life.

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