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REVIEW ON SLEEP AND ITS IMPACT ON HEALTH

Sanjana Raghwendra Singh*, Ashish Bhaktprahlad Singh and Ayan Sarkar

East West College of Pharmacy, Bengaluru, Karnataka, 560091.

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***Corresponding Author**
Dr. Sanjana Raghwendra Singh
East West College of Pharmacy, Bengaluru, Karnataka, 560091.

ABSTRACT

Sleep is an essential physiological process vital for human health and well-being. Understanding the intricate relationship between sleep and overall health is of utmost importance, considering the significant amount of time humans spend asleep. This comprehensive article explores the significance of sleep in physical and mental health, cognitive function, emotional regulation, and the management of sleep disorders. The article begins by presenting recommended hours of sleep for different age groups, underlining the importance of sufficient rest for maintaining both physical and mental well-being. The adverse effects of inadequate sleep, ranging from daytime sleepiness to increased risk of chronic conditions, are discussed, highlighting the need for better sleep habits. Sleep's impact on stress reduction and memory consolidation is explored. The connection between sleep and physical health is also examined, with evidence supporting sleep's role in heart health, immune response, weight management, and productivity. The relationship between sleep and mental health is underscored, elucidating the bidirectional link between sleep disturbances and mental health conditions. Sleep deprivation's potential to lead to mood disorders, anxiety, and depression is emphasized, highlighting the importance of addressing sleep problems in mental health treatment. The article concludes by delving into sleep hygiene practices, providing evidence-based strategies to promote better sleep. Overall, this article serves as a comprehensive guide to the significance of sleep in promoting overall health and well-being. By recognizing the profound impact of sleep on various aspects of human life, individuals can adopt informed decisions and lifestyle modifications to improve sleep quality and enhance overall health outcomes. Prioritizing proper sleep hygiene can pave the way for a healthier, more fulfilling life.

KEYWORDS: Sleep, cognitive function, emotional processing, mental health, physical health, sleep hygiene.

INTRODUCTION

O sleep! O gentle sleep!
Nature's soft nurse, how have I frighted thee, That thou no more wilt weigh my eyelids down And steep my senses in forgetfulness?[1]

Sleep is a vital yet often overlooked aspect of human life. Its impact on overall health and wellbeing is profound. As we spend a significant portion of our lives asleep, understanding the intricate relationship between sleep and health becomes crucial. Sleep plays a critical role in memory consolidation, physical restoration and emotional regulation. Neglecting sleep can disrupt these essential processes and lead to various health consequences. This article explores the significance of sleep in physical and mental health, cognitive function, emotional well-being and the management of sleep disorders. Additionally, it emphasizes the importance of sleep hygiene practises in optimizing sleep quality and promoting better overall health. Sleep is a fundamental biological process crucial for human health and well-being. In this article, we will emphasize its critical role in maintaining physical and mental well-being, exploring sleep stages, factors influencing sleep quality, and consequences of sleep deprivation. Recognizing the relationship between sleep and health is vital for promoting better sleep practices and improving overall quality of life.[2] Throughout, we will delve into the latest research findings, highlighting sleep as a crucial aspect of preventive healthcare. By acknowledging its significance, we can encourage informed decisions and lifestyle modifications, leading to better sleep hygiene and improved overall health outcomes. We will explore how sleep profoundly impacts physical health, mental well-being, cognitive function, emotional regulation, and the management of sleep disorders. Additionally, evidence-based strategies and recommendations will be provided to optimize sleep duration and quality, empowering readers to prioritize sleep for a healthier and more fulfilling life. Here are some of the aspects of sleep that are focused below.[3]

1. IMPORTANCE OF SLEEP

What was your sleep duration last night? The National Sleep Foundation recently revised its sleep recommendations. Listed below are some recommended hours of sleep according to the age groups and age range. "Proper sleep is crucial for maintaining both physical and mental

health. During sleep, our bodies undergo essential restorative processes, allowing us to recharge and restore.

Additionally, this restful time aids in sorting memories into long-term and short-term storage.

AGE GROUPS	AGE RANGE	RECOMMENDED HOURS OF SLEEP
INFANT	4-12 MONTHS	12-16 HOURS
TODDLER	1-2 YEARS	11-14 HOURS
PRESCHOOL	3-5 YEARS	10-13 HOURS
SCHOOL AGE	6-12 YEARS	9-12 HOURS
TEEN	13-18 YEARS	8-10 HOURS
ADULT	18 YEARS AND OLDER	7 HOURS

Fig. 1: Recommended sleep hours.

Yet, in the hectic pace of daily life, many of us find ourselves sleep deprived. Insufficient sleep not only has long-term consequences but also immediate adverse effects on our well-being. There are several side effects of inadequate sleep, including daytime sleepiness, fatigue, headaches, difficulty focusing, and an increased risk of conditions such as diabetes, hypertension, stroke, obesity, and heart attack."[4]

A) Sleep reduces stress

Sleep serves as a potent stress-reliever, enhancing concentration, mood regulation, and decision-making abilities. However, insufficient sleep not only impairs mental clarity but also reduces our capacity to cope with stress, partly due to elevated cortisol levels. A lack of quality sleep or complete sleep deprivation raises cortisol levels, which can be beneficial in the short term by promoting alertness and vigilance, and increasing heart rate and blood pressure. However, prolonged high cortisol levels can lead to systemic inflammation and disrupt hormonal balance. Normally, cortisol levels decrease in the evening as part of the body's preparation for sleep. When we delay sleep, cortisol remains elevated, interfering with the release of melatonin, a hormone crucial for regulating our sleep-wake cycles. Furthermore, inadequate sleep affects the rapid eye movement (REM) stage of sleep, responsible for processing emotions and memories. Missing out on the restorative benefits of REM sleep directly impacts our mood, making us more irritable and stressed.[5]

B) Sleep improves your memory

The connection between sleep and memory processing is well-established. During sleep, our minds process the stimuli we encountered while awake, leading to changes in the brain that

strengthen neural connections, facilitating memory formation. Recall, the ability to access these memories later, is enhanced by a good night's sleep, making it essential before taking tests, as emphasized by teachers. The relationship between sleep, learning, and memory is complex, but we have all experienced the negative impact of sleep deprivation on concentration and efficient learning. Therefore, getting good quality sleep is vital not only for acquiring new information effectively but also for recalling and sharing it with others. Sleep plays a critical role in memory consolidation, stabilizing our memories, which is crucial for learning new information. Research has shown that sleep supports this process through electrophysiological, neurochemical, and genetic mechanisms, primarily during the slow-wave sleep stage. Interestingly, improved memory benefits can be obtained even from short naps, as slow-wave sleep is entered relatively quickly after falling asleep.[6]

C) Sleep may prevent illness

Sleep deprivation can have severe consequences on health and has been associated with chronic diseases like diabetes, heart disease, and obesity. Insufficient sleep weakens the immune system, making individuals more susceptible to illnesses. Research indicates that those who sleep less than 7 hours per night are nearly three times more likely to develop colds compared to well-rested individuals. One concerning aspect of sleep deprivation is that its negative effects often go unnoticed until it is too late. As sleep loss accumulates, the damage to organs and the brain intensifies. The body and brain need adequate rest to replenish and clear waste, which occurs during periods of restful sleep. Being unaware of these effects can lead to further health complications as sleep deprivation progresses. Understanding the significance of restorative sleep is vital for maintaining overall health and well-being.[7]

2- SLEEP AND PHYSICAL HEALTH

Sleep is a powerful tool for enhancing physical health. During restful sleep, the body undergoes critical repair processes, boosting the immune system and promoting healing. Adequate sleep is convincingly linked to improved overall health, increased immune response, and potentially a longer life. Sleep positively impacts major bodily systems, offering protection against prevalent ailments. Sufficient restful sleep benefits heart health, boosts immunity, and influences appearance by promoting firmer skin and maintaining muscle mass. Well-rested individuals have a better mood and overall well-being. Prioritizing

sufficient, restful sleep plays a critical role in maintaining overall health and potentially extending lifespan.[8]

A) Helps improve your health

Lack of sleep can weaken the body's ability to combat viruses and infections, making it more susceptible to conditions like diabetes and high blood pressure. When fatigued, the body produces more cortisol, a hormone linked to stress and associated with heart attacks and heart disease. Adequate sleep also impacts lesser-known aspects of the immune system. Reducing sleep even by a few hours can significantly decrease the effectiveness of NK cells, which play a role in fighting tumours. This reduction in NK cell activity has been linked to a higher risk of cancer mortality. Getting enough sleep is essential, especially when receiving vaccines. Adequate sleep after vaccination has been shown to enhance the production of T-cells, making vaccines more effective in fighting off viruses.[9]

B) Helps with weight

Consistent sleep deprivation in adults is associated with a higher likelihood of being overweight or obese. A 2019 study found that compensating for sleep debt by sleeping in on weekends didn't counteract weight gain, emphasizing the need for regular, sufficient sleep for weight management. Sleep deficiency affects hunger-regulating hormones, increasing ghrelin levels, which intensifies appetite, and reducing leptin levels, making it harder to recognize fullness, potentially leading to overeating. On the other hand, getting enough sleep benefits those aiming to gain weight healthily, as it plays a role in muscle repair and development. Sleep quality positively impacts exercise performance and muscle building, creating a mutually beneficial relationship between sleep and physical activity.[10]

C) Improves performance and productivity-

Inadequate sleep can result in feelings of drowsiness, forgetfulness and lethargy, all of which can negatively impact high-level cognitive tasks and overall job performance. Prioritizing sufficient sleep ensures that individuals are more alert and responsive while at work, contributing to a safer and more efficient work environment. Exhaustion can diminish motivation, leading to reduced productivity and leaving tasks at work or home unattended, which may lead to increased stress in the future. On the other hand, ample sleep supports better emotional regulation, reducing mood swings and enhancing the ability to cope with challenging situations. By getting enough rest, individuals can approach their professional and personal responsibilities with a clearer mind and greater emotional capacity.[11]

D) Effects of sleep deprivation on physical health-

Sleep plays a crucial role in maintaining overall health, and its deficiency can have significant impacts on various aspects of well-being:

Obesity: Insufficient sleep can increase the risk of obesity by disrupting the balance of hunger-regulating hormones, leading to excessive hunger and overeating.

Heart Problems: Sleep deprivation can elevate daily average blood pressure, potentially increasing the risk of heart disease and stroke. It has also been linked to coronary artery calcification, a predictor for coronary heart disease.

Immune Health: Adequate sleep is essential for a robust immune response. Sleep deprivation can weaken the immune system's ability to combat infections, leading to increased vulnerability to illnesses and chronic inflammation.

Cognitive Performance: Good sleep enhances concentration, creativity, and learning abilities. Sleep-deprived individuals may struggle with attention and make more errors at work or in school.

Memory Consolidation: Sleep plays a critical role in memory processing and consolidation, affecting the ability to remember important details and information.[12]

3 – SLEEP AND MENTAL HEALTH

The impact of sleep on mental state is widely recognized, and it is not without reason that someone's mood is often linked to how they slept the night before. Sleep plays a significant role in mental and emotional health and has been found to have connections with various conditions, including depression, anxiety and bipolar disorder. Current research suggests a bidirectional relationship between sleep and mental health. Mental health disorders can disrupt sleep patterns, making it challenging to get restful sleep. On the other hand, poor sleep, including conditions like insomnia, can contribute to the development and exacerbation of mental health issues. Both sleep and mental health are intricate matters influenced by numerous factors. However, the strong association between them suggests that improving sleep quality can have positive effects on mental health and can be a valuable component in the treatment of various psychiatric disorders. Further research is ongoing to deepen our understanding of the relationship between sleep and mental health.

A) How is mental health related to sleep

Sleep is a dynamic process with fluctuating brain activity during its stages, forming the sleep cycle. NREM sleep slows brain activity, while REM sleep involves rapid and heightened brain activity, often linked to dreaming. Each stage contributes to brain health, enhancing thinking, learning, and memory. Recent research emphasizes the significant impact of brain activity during sleep on emotional well-being. Sufficient REM sleep is crucial for processing emotional information and consolidating positive memories. Insufficient sleep can harm emotional regulation, mood, and mental health, including an increased risk of mental disorders and suicidal thoughts. Sleep problems and mental health have a bidirectional relationship, where one can cause or result from the other. Additionally, obstructive sleep apnea (OSA) can impact mental health, occurring more frequently in individuals with psychiatric conditions. While more research is needed, evidence shows a complex link between sleep and mental health, influenced by individual factors.[13]

B) How does cbt work for insomnia

Addressing sleep problems with cognitive behavioural therapy for insomnia (CBT-I) has proven effective in breaking the cycle and relieving mental health conditions. CBT-I educates individuals about sleep and modifies sleep-related behaviours and thoughts. Good sleep hygiene practices are taught, like limiting naps, avoiding alcohol, nicotine, and caffeine before bedtime, and reducing electronic device use. Behavioural techniques like sleep restriction and stimulus control are applied to align sleep with actual needs. Relaxation techniques, cognitive strategies, and mindfulness practices are also used to promote better sleep, including "putting the day to rest," paradoxical intention, belief restructuring, and positive imagery.[14]

C) How does mental health problems affect your sleep-

If you live with a mental health problem, this could affect your sleep in lots of ways. For example:

- Anxiety can cause racing or repetitive thoughts, and worries that keep you awake. You may also have panic attacks while you're trying to sleep.
- Depression and seasonal affective disorder (SAD) can make you sleep more, including staying in bed for longer or sleeping more often. Depression can also cause insomnia.
- If you've gone through trauma, this can cause flashbacks, nightmares or night terrors that disturb your sleep. You might feel unsafe or uncomfortable in bed or in the dark.

- Paranoia and psychosis may make it difficult to sleep. You may hear voices, or see things you find frightening or disturbing.
- Mania often causes feelings of energy and elation, so you might not feel tired or want to sleep. Racing thoughts can also keep you awake and cause insomnia.
- Psychiatric medication can cause side effects including insomnia, disturbed sleep, nightmares and oversleeping. Stopping psychiatric drugs can also cause sleep problems.[15]

4- SLEEP AND COGNITIVE FUNCTION

Sleep plays a critical role in cognitive functioning, affecting attention, language, reasoning, decision-making, learning, and memory. It not only maintains cognitive health but can also enhance cognitive performance. Sleep facilitates memory consolidation, strengthening new memories acquired before sleep and improving the encoding of new information. The active system consolidation theory and synaptic homeostasis hypothesis explain the beneficial effects of sleep on memory. Various methods, such as memory reactivation during sleep and stimulating sleep-specific brain oscillations, can potentially enhance cognitive abilities. Optimizing sleep timing in relation to learning is important to support memory processes. While the possibility of using sleep for cognitive enhancement is intriguing, ethical considerations and methodological caveats must be addressed. Harnessing the potential of sleep for cognitive enhancement could have significant implications for well-being and cognitive abilities.[16]

A) How poor sleep affects the brain-

Throughout a typical night of sleep, an individual goes through cycles of NREM and REM sleep, each lasting about 90 to 120 minutes, repeating several times. These sleep stages involve distinct changes in both the brain and body, with specific chemicals being activated or deactivated to facilitate rest and recovery. Poor sleep can manifest in various ways, such as insufficient sleep duration or disrupted sleep patterns. When sleep is inadequate, the brain's functioning is adversely affected. Neurons in the brain become strained and less capable of optimal performance in different cognitive tasks due to the lack of time to rejuvenate. Short-term consequences of poor sleep may result from occasional all-nighters, whereas individuals with chronic sleep problems may experience continuous negative effects on their daily functioning. Over the long-term, inadequate sleep might increase the risk of cognitive decline

and dementia. Therefore, prioritizing sufficient and restful sleep is crucial for maintaining optimal brain function and overall cognitive health.[17]

B) Can sleep disorders affect cognition

Sleep disorders, such as insomnia, often result in inadequate or interrupted sleep, making it unsurprising that they can be associated with cognitive impairment. Obstructive sleep apnea (OSA) is one of the prevalent sleep disorders, characterized by a blocked airway that causes breathing interruptions during sleep and decreases oxygen levels in the blood. OSA has been linked to daytime sleepiness and significant cognitive issues, including problems with attention, thinking, memory, and communication. Additionally, research has revealed that individuals with sleep apnea are at a higher risk of developing dementia.[18]

C) Will improving sleep quality benefit cognition?

Addressing sleeping problems and improving sleep quality can be a practical and effective approach to enhance cognitive performance. Ensuring an adequate amount of uninterrupted sleep allows the brain to recover and mitigates the negative impacts of poor sleep on various cognitive functions. Moreover, researchers and public health experts are recognizing the potential of good sleep as a preventive measure against dementia and Alzheimer's disease. While further studies are required to definitively establish the role of sleep in preventing cognitive decline, preliminary research indicates that taking measures to improve sleep may decrease the risk of developing Alzheimer's disease in the long run.[19]

5- SLEEP AND EMOTIONAL REGULATION

Emotional processing role of sleep-

While various theories exist about the exact functions of sleep, it is widely acknowledged that sleep serves an adaptive purpose in processing daily stressors and emotions. Sleep deprivation often leads to a rebound effect of increased rapid eye movement (REM) sleep and slow wave sleep (SWS) in subsequent nights, indicating the importance of these sleep stages. Clinical evidence further supports the idea that sleep plays a role in regulating our emotional state, as sleep disturbances are associated with affective dysfunction. In the following section, we will briefly explore the role of different sleep stages, including NREM sleep, REM sleep, and REM-dreaming, in the modulation of emotions.

Sleep deprivation affects emotional processing-

The relationship between sleep loss and emotional well-being is complex and bidirectional. Sleep deprivation and insomnia can have significant effects on emotional reactivity and social functioning. Lack of healthy sleep tends to enhance negative emotional reactions and dampen positive responses to positive events. Studies have shown that response times for positive stimuli are faster compared to negative and neutral stimuli after sleep loss, while accuracy in recognizing the emotional valence of stimuli decreases. Sleep disruption can intensify negative emotions and reduce positive emotions following a goal-achieving event. Sleep disturbances are associated with various psychiatric disorders, including anxiety and mood disorders, and can increase feelings of depression, confusion, anger, and irritability in children and adolescents. Sleep plays a crucial role in modulating emotional and motivational drives, and deprivation of REM sleep, in particular, can lead to increased emotional irritability and reactivity. The relationship between sleep and emotion regulation is an important area of study that can provide insights into maintaining stable emotional states. Overall, understanding the bidirectional relationship between sleep deprivation and stress is crucial for a comprehensive view of their impact on mental and physical well-being.[20]

6- SLEEP DISORDER

WHAT IS SLEEP DISORDER?

A sleep disorder is a condition that regularly disrupts your ability to achieve sufficient and restful sleep. While occasional difficulties with sleep can be attributed to temporary factors like stress, illness, or travel, persistent problems falling asleep, waking up exhausted, or feeling drowsy during the day may indicate a sleep disorder. The impact of sleep disorders goes beyond daytime sleepiness, affecting both mental and physical health, including mood, energy levels, and stress management. Ignoring sleep problems can lead to various adverse consequences, such as weight gain, car accidents, impaired job performance, memory issues, and strained relationships. Prioritizing quality sleep is essential for overall well-being and optimal performance, not merely a luxury. Experiencing frequent sleep difficulties can be disheartening and debilitating. Struggling to sleep at night leaves you fatigued in the morning, and as the day progresses, your energy wanes. The frustrating cycle continues. However, living with a sleep problem is not inevitable. There are numerous approaches to identify the underlying causes of your sleep disorder and improve your sleep, overall health, and overall quality of life.

Signs and symptoms of a sleep disorder

Distinguishing between occasional sleeping problems and a potential sleep disorder or underlying medical condition involves careful observation of your symptoms, particularly the daytime indicators of sleep deprivation. Pay close attention to how your sleep difficulties manifest and impact your daily life. By scrutinizing these signs, you can gain insight into whether it's a minor, passing annoyance or a more serious issue that may require further evaluation and attention.

Is it a sleep disorder?

Consider the following questions

- Do you often feel irritable or sleepy during the day?
- Is it challenging for you to stay awake when sitting still, watching television, or reading?
- Have you experienced moments of falling asleep or feeling extremely tired while driving?
- Do you struggle with concentration and find it hard to focus?
- Have others frequently commented that you appear tired?
- Do you react slowly to situations?
- Are you finding it difficult to control your emotions?
- Do you feel the need to take a nap almost every day?
- Do you rely on caffeinated beverages to keep yourself alert and awake?

If you have been experiencing any of the above symptoms on a regular basis, it may indicate the presence of a sleep disorder. The more "yes" answers you have, the higher the likelihood that you might be dealing with a sleep disorder. In such cases, it is advisable to seek medical advice and evaluation to address the underlying issue.[21]

Types of common sleep disorders-

Sleep disorders can have profound effects on our overall well-being and daily functioning. Let's delve into each of the common sleep disorders mentioned:

- Insomnia: Difficulty falling asleep or staying asleep, often caused by stress, anxiety, depression, health conditions, medications, or lifestyle factors. It leads to inadequate rest, daytime fatigue, and impaired performance.
- Sleep Apnea: Breathing interruptions during sleep, either due to a blocked airway (obstructive sleep apnea) or improper brain signalling to muscles (central sleep apnea). It results in disrupted sleep, daytime sleepiness, and reduced alertness.

- Restless Legs Syndrome (RLS): An irresistible urge to move legs or arms during rest, causing difficulty falling asleep and daytime fatigue.
- Narcolepsy: Excessive daytime sleepiness and sudden "sleep attacks" during daily activities, affecting wakefulness and alertness.
- Circadian Rhythm Sleep Disorders: Disruptions in the body's internal clock, leading to sleep-wake cycle issues and daytime sleepiness, common in shift work sleep disorder and jet lag.

Proper management of sleep disorders through lifestyle changes, behavioural therapy, and, if necessary, medication, is essential for improving sleep quality and overall well-being. Seeking advice from a sleep specialist can lead to accurate diagnosis and personalized treatment plans.

What causes sleep disorder?

Sleep disorders are caused by disruptions to the body's natural sleep-wake cycle, and the specific factors contributing to these disruptions can vary depending on the type of sleep disorder. Some common causes of sleep disorders include:

- Underlying Medical Conditions: Certain medical conditions, such as heart disease, asthma, chronic pain, or neurological disorders, can lead to sleep disturbances.
- Mental Health Conditions: Sleep disorders can be linked to mental health issues like depression, anxiety disorders, and other psychiatric conditions.
- Genetic Factors: Genetic mutations or predispositions can play a role in the development of some sleep disorders.
- Medication Side Effects: Some medications can interfere with sleep patterns and contribute to sleep disorders.
- Shift Work: Working late shifts or irregular hours can disrupt the natural sleep-wake cycle and lead to sleep problems.
- Substance Use: Consuming substances like caffeine or alcohol close to bedtime can negatively impact sleep.[22]
- Neurochemical Imbalances: Low levels of certain chemicals or minerals in the brain can affect sleep patterns.
- Unknown Causes: In some cases, the exact cause of sleep disorders may not be identified.
- Risk factors that may increase the likelihood of experiencing sleep disorders include:

- Underlying Health Conditions: Having pre-existing medical conditions may elevate the risk of sleep disturbances.
- Stress: High levels of stress can contribute to sleep problems.
- Night Shift Work: Working late shifts or irregular hours can increase the risk of sleep disorders.
- Family History: A history of sleep disorders in the family may predispose individuals to similar issues.

Research indicates that women and individuals assigned female at birth are more susceptible to sleep disorders compared to men and individuals assigned male at birth. Additionally, about half of all adults over the age of 65 experience some form of sleep disorder. Lack of sufficient sleep can have significant consequences beyond daytime fatigue. It can affect cognitive functions like learning, memory, and decision-making, leading to personality changes like irritability and reduced reaction times, increasing the likelihood of accidents. Chronic sleep deprivation can also contribute to the development of various health conditions, including depression, obesity, type 2 diabetes, heart disease, and dementia. While rare, some sleep disorders can pose life-threatening risks if left untreated.[23]

7- SLEEP HYGIENE AND RECCOMENDATIONS-

What is sleep hygiene?

Hygiene refers to a set of practices and habits aimed at maintaining cleanliness and promoting overall health. Similarly, sleep hygiene encompasses a series of strategies and routines specifically tailored to ensure high-quality sleep. Here are ten sleep hygiene tips, endorsed by experts, to enhance the sleep experience and improve sleep quality.

Sleep hygiene tips

- Establish a Consistent Sleep Schedule: Maintain regular sleep and wake-up times to align with your body's natural circadian rhythm, promoting better sleep quality.
- Reserve Your Bed for Sleep: Use your bed solely for sleeping to create a mental association between your bed and sleep, avoiding activities that might hinder relaxation.
- Create a Comfortable Sleep Environment: Ensure your bedroom has an optimal temperature, good ventilation, and a comfortable mattress and bedding to enhance relaxation.

- Limit Gadgets Before Bedtime: Avoid using electronic devices before sleep, as the light emitted can disrupt melatonin production, making it harder to fall asleep.
- Develop a Sleep Routine: Engage in calming activities like reading or listening to soothing audio before bedtime to unwind and prepare your mind for sleep.
- Get Adequate Sunlight Exposure: Spend time in natural light during the day to help regulate your circadian rhythm and support the production of Vitamin D6.
- Avoid Stimulants: Minimize caffeine and alcohol consumption, especially in the evening, as they can interfere with your sleep-wake cycle and may cause nocturia.
- Have an Early Dinner: Opt for an early dinner to prevent indigestion and acid reflux, which can disrupt sleep. Avoid overeating late at night, as it may lead to obesity and sleep apnea risks.
- Stay Active During the Day: Engage in regular physical activity, such as walking, jogging, yoga, or any exercise of your choice, to improve metabolism and promote better sleep.
- Practice Yoga Nidra: Try guided relaxation techniques like yoga nidra to induce deep relaxation and facilitate restful sleep or relaxation.[24]

The Importance of Sleep Hygiene

Sleep hygiene encompasses various practices and behaviours that influence the quality and duration of sleep. Key components of good sleep hygiene include:

- Consistent Sleep Schedule: Establish a regular bedtime and wake-up time, even on weekends and during travel, to regulate your body's internal clock.
- Prioritizing Sleep: Recognize the importance of adequate sleep and make it a priority in your daily life, even if it means adjusting other activities.
- Responsible Napping: Limit daytime naps to the morning or early afternoon and avoid napping for extended periods to prevent interference with night-time sleep.
- Relaxing Bedroom Environment: Create a sleep-conducive environment in your bedroom by minimizing light and noise, using tools like curtains and white noise machines, and maintaining a comfortable temperature.
- Healthy Habits: Engage in moderate exercise and follow a nutritious diet, as both can positively impact sleep quality. Avoid smoking, alcohol, and caffeine close to bedtime, and refrain from late-night heavy meals.

- If you consistently experience sleep deficiencies or disturbances, it is advisable to seek guidance from a medical professional. They can provide valuable insights, evaluate your sleep health, and address any potential sleep disorders through appropriate testing and treatment.

Sleep hygiene practices

Sleep hygiene refers to a set of lifestyle practices and environmental factors that can influence the quality of our sleep. These practices can either positively or negatively impact our ability to fall asleep and stay asleep. For instance, habits such as consuming caffeine, alcohol, or nicotine close to bedtime can disrupt sleep, while regular exercise can promote better sleep. Creating a sleep-conducive environment is essential for good sleep hygiene. This includes ensuring the bedroom is dark, quiet, and at a comfortable temperature. Excessive screen time before bedtime has been shown to interfere with sleep quality, so limiting screen usage can be beneficial. Personal habits and behaviours, as well as external factors like stress and life events, can affect sleep hygiene. Identifying these precipitating factors is crucial in improving sleep outcomes. Making behavioural changes and addressing the factors that contribute to poor sleep hygiene can lead to better sleep. Sleep hygiene education is often delivered in group settings, but precision medicine approaches that consider individual differences may be more effective. Future research in sleep hygiene should focus on strengthening the body's internal clock through morning light exposure and exercise. Managing negative emotions before bedtime can also help improve sleep. Overall, adopting healthy sleep hygiene practices can lead to better sleep and overall well-being. By understanding and addressing individual factors that impact sleep, we can tailor sleep hygiene practices for optimal sleep outcomes.[25]

CONCLUSION

In conclusion, sleep is a vital aspect of human life, with a profound impact on overall health and well-being. Understanding the intricate relationship between sleep and health is crucial, as it plays a critical role in memory consolidation, physical restoration, and emotional regulation. Neglecting sleep can lead to various health consequences and disrupt essential processes, affecting cognitive function, emotional well-being, and the management of sleep disorders. Prioritizing sleep hygiene practices is essential for optimizing sleep quality and promoting better overall health. Consistent sleep schedules, a comfortable sleep environment, limiting electronic device usage before bedtime, and avoiding stimulants can contribute to

better sleep outcomes. Sleep hygiene also involves maintaining a healthy lifestyle, engaging in regular physical activity, and managing stress to support restful sleep. Sleep disorders, such as insomnia, sleep apnea, restless legs syndrome, and narcolepsy, can significantly impact daily functioning and overall health. Recognizing the signs and symptoms of sleep disorders and seeking appropriate medical evaluation and treatment is crucial for addressing underlying issues and improving sleep quality. Sleep not only enhances cognitive functioning but also has a significant impact on emotional regulation. Sufficient REM sleep is essential for processing emotional information and consolidating positive memories. Conversely, sleep problems and mental health conditions can have a bidirectional relationship, influencing each other's severity. Overall, understanding the critical role of sleep in physical and mental health can lead to informed decisions and lifestyle modifications, promoting better sleep hygiene and improved overall health outcomes. By acknowledging the significance of restorative sleep and implementing evidence-based strategies, individuals can prioritize sleep for a healthier and more fulfilling life. Emphasizing the value of sleep in preventive healthcare can pave the way for better well-being and cognitive abilities, ultimately contributing to a better quality of life.

ABBRIVATIONS

REM- Rapid eye movement

NK CELLS- Natural killer cells

OSA- Obstructive sleep apnea

CBT- Cognitive behavioural therapy

SAD- Seasonal affective disorder

SWS- Slow wave sleep

RLS- Restless leg syndrome

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