ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 18, Issue, 03, pp.36429-36431, March, 2026
DOI: https://doi.org/10.24941/ijcr.50239.03.2026

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

SLEEP HYGIENE AND ITS IMPACT ON HEALTH: A REVIEW

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ARTICLE INFO

Article History:
Received 15th December, 2025
Received in revised form
25th January, 2026
Accepted 18th February, 2026
Published online 29th March, 2026

Keywords:

Caffeine, Circadian Rhythm, Noise, Nicotine, Sleep hygiene, Sleep Quality.

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ABSTRACT

Sleep hygiene is a group of behavioral and environmental practices that improves the quality of physical, mental and emotional well-being. Lifestyle factors such as increased screen time, work related stress, caffeine intake; environmental factors like noise and light can affect sleep hygiene. Poor sleep hygiene leads to physical, mental and cognitive health outcomes along with metabolic disorders, cardiovascular diseases and psychological disturbances. Sleep affects children, old age people, and healthcare workers in different ways. In children, academic workload, including online classes, e-learning, homework, and assignments, can leads to delay bedtime, and stress, anxiety reduces the quality sleep. Healthcare professionals working in shifts, particularly night shifts, experiences disturbed sleep, with 64–70% reporting poor sleep quality after completion of night shift. Old age people commonly face sleep problems such as insomnia and obstructive sleep apnea, due to medical comorbidities, Intake of medications such as diuretics, beta-blockers, antidepressant, and irregular daytime napping. These factors are effects on quality sleep and impacting physical and mental health. Sleep related problems are widely reported across the Indian population and it is a significant health issue in India, Studies indicates that approximately 25–30 % of Indian population is affected by insomnia, approximately 11 % of adults are affected by obstructive sleep apnea, with millions of people affected by moderate-to-severe forms of the disorder. In addition sleep disturbances are frequently reported among older adult and rural populations it indicating a considerable national burden this review highlights the concept of sleep hygiene, physiology of sleep, factors affecting for sleep hygiene, impacts of sleep hygiene on physical health, mental health, cognitive functioning and practices to promote healthy sleep hygiene.

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Citation: Ms. Vasantha, S. and Mrs. Renukadevi, D.N. 2026. "Community Based Tourism and its Economic Impact: A Study on Khulna and Kushtia area.". ***International Journal of Current Research, 18, (03), 36429-36431.***

INTRODUCTION

Peaceful sleep is a sign of a sound mind. Quality sleep is improves all aspects of health. Sleep hygiene includes maintaining regular sleep and wake times, avoid caffeine and nicotine, limit screen time before bed, and create a quiet, dark and comfortable environment. Good sleep promotes tissue repairing, improving mood, enhancing the immune function, increasing the brain performance, promoting cardiac efficiency, regulating the metabolism, contributes to maintaining optimal weight and strengthen stress handling abilities. The recommended amount of sleep for adults is 7-9 hours per night, whereas children's and adolescents need longer sleep to support growth and development. In a wider context poor sleep habits leads to major health problems, greater health related costs, lower productivity at work and increased incidence of accidents are imposing a considerable economic and social burden on societies. "In a cross-sectional study involving 504 medical students at Tanta University, Egypt, 93.6% of participants reported poor sleep hygiene practices, while 71.2% experienced poor sleep quality. A statistically significant positive correlation was observed between sleep hygiene and sleep quality ($r = 0.366$, $p < 0.001$), indicating that poorer sleep hygiene was associated with poorer sleep quality among students.

DEFINITION

Sleep is a natural, periodic state of rest characterized by decreases in awareness and responsiveness to stimuli. This is essential for physical recovery and mental functioning. Sleep hygiene refers to the habits, environmental factors and practices that may influence the duration and quality of one's sleep.

PHYSIOLOGY OF SLEEP

Sleep plays a vital role that supports bodily repair, cognitive performance and emotional well-being. It consists of two main types: Non rapid Eye Movement sleep (NREM) and Rapid Eye Movement sleep (REM). NREM sleep as three stages; N1

(Light sleep), N2 (Intermediate sleep) and N3 (Deep slow wave sleep) which is important for physical restoration and tissue repair. REM sleep in this type where dreaming occurs and it is useful for learning, memory and emotional regulation. The sleep wake cycle is regulated by the circadian rhythm, the 24 hours internal clock regulated by light or dark, tells the body when to wake up. Disruptions in this rhythm can cause insomnia, fatigue, and other health problems. Several Hormones such as melatonin, cortisol and growth, hormone, along with neurotransmitters like GABA and adenosine helps the body fall asleep and maintain sleep throughout the night. Understanding sleep physiology helps in developing effective sleep habits.

DETERMINANTS OF SLEEP

The multiple biological, environmental, behavioral and psychological factors that influence the quality, length and pattern of sleep. These determinants explain why sleep patterns shows individual differences and facilitate an understanding of sleep hygiene.

Biological determinants: Circadian rhythm: It is the natural 24-hour clock of our body. It controls sleep, alertness and other physiological process. Sleep pressure: Extended wakefulness builds sleep pressure and increasing the urge to sleep. Hormones and Neurochemicals: Hormones like melatonin provides signals to the body to prepare for sleep, Cortisol rises in the morning to help the body to wake up, Adenosine builds up in the brain while awake, making feel sleepy. Neurotransmitters like dopamine, histamine and norepinephrine keep parts of the brain active in the day. GABA and galanin reduce brain activity and promoting sleep. Age: Sleep pattern changes naturally over life. Newborns require 16-18 hours, adults require 7-9 hours and older adults often experience earlier wake time due to changes in melatonin and brain structure. Sex: Sleep disturbances are very common in females during menstrual cycle, pregnancy period and menopause. Aging men's generally experiences decline in deep sleep with age.

- **Psychological determinants:** Psychological determinants such as stress, anxiety, overthinking and depression can make it difficult to fall asleep, stay asleep and achieve restorative sleep.
- **Behavioral and lifestyle determinants**: Intake of caffeine and nicotine can reduce sleep quality. Regular exercise improves sleep but strenuous activity close to bedtime may interfere with it. Maintaining a regular sleep schedule and keeping weekend and weekday sleep times in sync helps to maintain good sleep quality.
- **Environmental determinants**: Environment plays an important role in sleep quality. Improper light, noise, room temperature and poor air quality can disrupt sleep.
- **Social and occupational determinants**: work related factors such as frequent shift changes, long working hours, family responsibilities and poverty can leads to poor sleep quality.

POSITIVE AND NEGATIVE IMPACTS OF SLEEP HYGIENE

Positive impacts: Physical health: Quality sleep helps to boost the immune system, regulates heart function, prevents weight gain, improves metabolism, reduce the risk of developing type 2 diabetes mellitus and promotes tissue repair.

Mental and cognitive health: Sleep helps to reduce irritability and anxiety by stabilizing emotions. Quality of sleep also improves memory, learning and concentration and helps to manage stress.

Negative impacts: Poor sleep hygiene increases the risk of diabetes mellitus, obesity and heart diseases. It also affects memory, reduces attention and concentration, increases irritability, stress, depression and weakens the immune system.

MEASURES TO IMPROVE SLEEP HYGIENE

Maintaining a regular sleep routine: Going to bed and waking up from the bed at the same time every day including weekends. As a result the person feels sleepy at the same time at each night. Enhance the bedroom environment: Arranging the sleeping area in a comfortable manner. The room should be calm, free from noise; cool and well-ventilated room promotes deeper sleep. Avoid daytime naps: Avoid taking long naps in the afternoon because it reduces the body's natural need for sleep at night. Avoid heavy meals at night: Avoid large and heavy meals 2-3 hours before bedtime. It prevents acid reflux, indigestion thereby promoting comfort and facilitating easier sleep onset. Reduce screen exposure at night: Decreasing the use of electronic devices and screen exposure at night promotes better sleep. Regular daytime exercise: Regular exercise during the day helps induce sleep. Avoid strenuous activity and exercise at bed time. Avoid stimulants before bedtime: Avoid caffeine, alcohol, nicotine and heavy meals in the evening as they reduce sleep quality. Use the bed only for sleep: The bed should be used only for sleep, avoid unnecessary activities in bed. Don't force for sleep: Avoiding forced sleep; it reduces alertness, anxiety and promotes natural sleep.

CONCLUSION

Good sleep hygiene promotes sleep quality and improves physical and mental well-being. By following healthy sleep habits, such as maintaining regular sleep routine, avoiding daytime naps, avoiding stimulants, reducing the screen exposure at night and engaging in regular exercise, these strategies help to prevent sleep disturbances and improve sleep quality. Poor sleep hygiene markedly increases the risk of non-communicable diseases, emphasizing the importance of addressing sleep health as a public health priority. Nurses and other healthcare professionals play a vital role in screening for sleep related problems and educating the individuals about healthy sleep practices. Furthermore, community- based awareness initiatives are important for promoting sleep hygiene and improving sleep health across the population. Effective sleep hygiene is achieved through gradual and sustainable behavioral changes, which can lead to long-term improvements in sleep quality.

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