"Sleep Hygiene" The Gateway for Efficient Sleep: A Brief Review

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Abstract

Sleep hygiene comprises series of considerations by which quality and efficiency of one's sleep can be positively affected. Since 1998 the American academy of sleep medicine recommended some practice parameters which could be of help not only as solid recommendations to be followed but also as real supplements to other therapies including medications and cognitive behavioural therapies for a variety of sleep disorders, mainly insomnia. Based on these recommendations four components guide practice of good sleep hygiene. These include change in behavior, environment, diet and exercise. In this brief review we mean to outline these points which should be well managed and controlled so that to maximize the response to conventional therapeutic measures for various sleep disorders, mainly insomnia.

Review

Understanding sleep hygiene
Sleep hygiene refers to simple recommendations that may improve the length and the quality of sleep by modification of habits, behaviors, and environmental conditions. Common complains that suggest poor sleep hygiene are disturbed sleep excessive daytime sleepiness, increased sleep latency, and nocturnal awakenings. Watching late night television, surfing the internet, late night use of computer, smoking, alcohol or coffee drinking around bedtime contribute to poor sleep hygiene (1). Occupational stress, irregular sleep habits and poorly controlled medical and psychiatric conditions add to poor sleep hygiene. Sleep hygiene practice improves the quality and quantity of sleep and restores a natural sleep wake cycle in synchrony with the circadian rhythm(1-5). A few basic physiologic principles underlie the sleep hygiene recommendations. Sleep hygiene is not only a solitary intervention but also supplants other therapies like medications and cognitive behavior therapy (2-4). It also continues to maintain over time the therapeutic benefits obtained by the other therapies (5). Many clinical studies have demonstrated a better quality of sleep when compared against pharmacological therapy (2-6).

The practical aspects of sleep hygiene
According to American academy of sleep medicine four components guide practice of good sleep hygiene. These include change in behavior, environment, diet and exercise (1,2).

Behavior and sleep
1. It requires a regular sleep schedule in terms of bed and wake-up time daily, regardless of the day of the week. Variable sleep and wake times offsets the circadian rhythm and result in insomnia or sleepiness during the night and the day respectively. The situation is worse in shift workers and travelers across time zones. The body system rhythms fail to match rapid changes in the environment causing disruption of the homeostasis (1,5,8).
2. A pre-sleep routine to wind down and relax is helpful in inducing sleep. Engaging in a fixed routine prepares the mind and body for sleep (1,2).
3. Trying hard to fall asleep invariably drives sleep away. It is based on the principle of the paradoxical intention (1,2,5).
4. It is advisable to avoid Sleep deprivation during the night. It causes a rise in the stress hormone levels increasing the wakefulness (1,5,8).
5. Bed should be used for sleep only and it should be approached only when drowsy. It is easy to condition the brain to identify the bed to be a place to relax and sleep (1,2).
6. Lying down in bed awake for longer than 10 to 20 minutes without falling asleep or continuing to rest in bed after awakening must be avoided. If awake for 10-20 minutes it is better to get up and leave the bedroom. Engaging in mellow, non-exciting activity is more conducive to sleep (1,5,8).
7. The power nap for less than 30 minutes may be refreshing. Longer naps cause sleep inertia and more sleepiness after awakening from the nap. Napping offsets the circadian rhythm (1,2).
8. The racing mind or inability to stop brain from thinking is example of anxiety disorder that must be addressed to ensure good sleep. The stress related to such anxiety releases corticotropin-releasing hormone (CRH) and triggers a chain reaction leading to the release of cortisol and other stress hormones. The high levels of cortical and ACTH increase wakefulness (8).

Proper sleep environment
1. Bedroom should be dark. For the shift workers who
sleep during the daytime the bright lights should be avoided to maintain melatonin levels in the brain (1,2).  
2. The temperature in the bedroom should be comfortable as uncomfortably warm environment disrupts sleep (1).  
3. The sound levels need to be controlled to minimize loud sounds. Ear plugs or “white noise” machines minimize loud noises (1).  
4. Dust mites and other allergens induce nasal mucosal congestion, sneezing, sniffling and coughing disrupting the sleep (1,2).

Diet and sleep  
1. Caffeine 6-8 hours before sleep may disrupt the sleep architecture. Any caffeinated product will have the similar effect. According to the American academy of sleep medicine caffeine should be used with a strategic plan to prevent daytime sleepiness. Caffeine antagonizes the adenosine receptors and therefore the somnogenic effect of the higher adenosine concentrations (1,6,8).  
2. Alcohol is best avoided 3-5 hours before sleep. Alcohol is a central nervous system depressant. It is a muscle relaxant and affects the respiratory system’s ability to keep the airways open during the inspiration. In addition it disrupts the sleep architecture and increases the arousal threshold, a defense mechanism against obstructive sleep apnea that restores the airway patency (1,5).  
3. Nicotine by its stimulatory effect on serotoninergic neurons in the brain disrupts sleep. Normally, serotoninergic fibers fire rapidly during wake state, decrease firing in slow wave sleep, and then become nearly quiet during rapid eye movement (REM) sleep. Nicotine causes the serotoninergic fibers to continue firing at a higher-than-normal rate during sleep maintaining the wakefulness (1,2).

Exercise and sleep  
1. Regular exercise for 20 to 30 minutes 3-4 times a week is recommended. Exercise promotes a regular sleep-wake schedule and improves quality of sleep (1,7). Exercise increases the amount of deep, delta sleep that is considered the restorative sleep (2,6,7).  
2. Heavy exercise should be avoided before sleep as it raises the body temperature and disrupts the sleep-wake cycle. Heavy exercise releases epinephrine, a hormone that creates a sense of happiness and excitement (1).

Conclusion(s)

It is important to recognize the limitations of the sleep hygiene therapy. In most instances it is considered a more supportive form of therapy. Patient's medical and psychiatric co-morbid conditions should be well managed and controlled for obtaining the maximum benefits from the practice of sleep hygiene.

Abbreviation(s)

ACTH: Adrenocorticotropic Hormone  
CRH: Corticotropin Releasing Hormone  
REM: Rapid Eye Movement

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