

## EDITORIAL

# Sleep: An Undervalued Privilege in the Contemporary Lifestyle

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Sleep is an essential part of our daily routine. We spend about one-third of our lives sleeping. Quality sleep, which is of appropriate duration and at proper time, is equally fundamental to survival as food and water. Without sleep, our brain cannot form or maintain pathways for learning and creating new memories, and it becomes difficult to concentrate and respond quickly.

Sleep is important to a number of brain functions, including neuronal communication. Remarkably, our brain and body stay active while asleep. Recent findings suggest that sleep plays a housekeeping role that removes toxins in the brain that build up while we are awake. The sleeping brain has been shown to remove metabolic waste products at a faster rate than during an awake state.<sup>1</sup> It is further theorized that sleep helps facilitate the synthesis of molecules that help repair and protect the brain from these harmful elements generated during waking.<sup>2</sup>

Every individual needs sleep, and its diverse biological functions and mechanisms remain a paradox. Sleep affects almost every type of tissue and system in the body--from the brain, heart, and lungs to metabolism, immune function, mood, and cognition. Research shows that a chronic lack of sleep, or getting poor quality sleep, increases the risk of disorders including high blood pressure, cardiovascular disease, diabetes, depression, and obesity.<sup>3</sup>

Sleep architecture refers to the basic structural organization of normal sleep, and consists of two types of sleep, non-rapid eye-movement (NREM) sleep and rapid eye-movement (REM) sleep. NREM sleep is divided into stages 1, 2, 3, and 4, representing a continuum of relative depth. Each has unique characteristics including variations in brain wave patterns, eye movements, and muscle tone. Over the

course of a period of sleep, NREM and REM sleep alternate cyclically. The function of alternations between these two types of sleep is not yet understood, but irregular cycling and/or absent sleep stages are associated with sleep disorders.<sup>4</sup>

An episode of sleep commences with a short period of NREM stage 1 progressing through stage 2, followed by stages 3 and 4 and finally to REM. However, individuals do not remain in REM sleep for the remainder of the night, but rather cycle between stages of NREM and REM throughout the night. NREM sleep constitutes about 75 to 80 percent of total time spent in sleep, and REM sleep constitutes the remaining 20 to 25 percent. The average length of the first NREM-REM sleep cycle is 70 to 100 minutes. The second, and later, cycles are longer lasting—approximately 90 to 120 minutes.<sup>5</sup> In normal adults, REM sleep increases as the night progresses and is longest in the last one-third of the sleep episode. As the sleep episode progresses, stage 2 begins to account for the majority of NREM sleep, and stages 3 and 4 may sometimes altogether disappear.

There is a great need to understand the physiology of sleep in the light of mental and behavioural disorders especially depression.

Advancing age is related to constant and considerable changes in Sleep Architecture. From infancy to adulthood, there are noticeable changes in how sleep is initiated and sustained, the percentage of time spent in each stage of sleep, and overall sleep efficiency (i.e., how successfully sleep is initiated and maintained). Sleep efficiency declines with age. Even though, its consequences are well documented, but the reasons are complex and poorly understood.

Most of us are surrounded by a culture that glorifies hectic lifestyles and task saturation. Thus, the lack of sleep has become a prevalent problem in modern society, affecting many individuals at some point in their lives.

Sleep deprivation occurs when an individual gets less sleep than needed to feel awake and alert. People differ in how little sleep is needed to be considered sleep-

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deprived. Some people, such as older adults seem to be more resistant to the effects of sleep deprivation, whereas others, especially children and young adults, are more vulnerable.

While occasional sleep interruptions are generally no more than a headache, but ongoing lack of sleep can result in excessive daytime sleepiness, emotional difficulties, poor job performance, obesity, and a reduced perception of quality of life.

While there is no doubt regarding the importance of restorative sleep, attention and emphasis is necessary to both manage and prevent sleep deficit. In 2015, the National Sleep Foundation (NSF) of the United States stated that there is a wide variation in durations of sleep required by different age groups<sup>6</sup> such as, newborns require 14-17 hours of sleep, teenagers (14 -17 years) require 8 to 10 hours of sleep and Adults (18-64 years) require 7 to 9 hours of sleep.

Quality of sleep is associated with the activity of pineal glands, also known as the third eye, that starts functioning according to the circadian rhythm, by releasing melatonin at 9:00 p.m. Due to our hectic schedules, sleeping at this time may not be possible for most of us which is why sleeping between 10 p.m. to 6 a.m. is highly recommended, as the quality of sleep is better during these hours.

Certain people including the prolific inventor Thomas Edison, consider sleep as wasted time, and deliberately deprive themselves of sleep to pursue entertainment activities, educational goals, or monetary interests. This intentional sleep deprivation is mostly seen in teenagers and young adults. However, others may unintentionally lose sleep because of shift work, family obligations, or demanding jobs especially medical students<sup>7</sup>. According to our local research, 33.5% medical students had insomnia<sup>8</sup>.

Not all cases of sleep deprivation are voluntary. Insomnia, sleep apnoea, restless legs syndrome, night terrors, sleepwalking, and other medical problems, such as emotional disorders, hormonal imbalances, and chronic illnesses can also affect sleep. These conditions can be assessed and treated through consultation with a primary care physician and Sleep-medicine specialist. The treatment is mainly based on behavioural and cognitive measures, and pharmacotherapy. When non-medicinal treatment is ineffective, drugs are prescribed to induce sleep. There is a wide range of available options, which include benzodiazepines, non-benzodiazepine hypnotics, and melatonin receptor antagonists.

The good news is that most of the negative effects of sleep deprivation can be reversed with sufficient sleep. The treatment is to satisfy the biological sleep requirement, prevent deprivation and pay back accumulated sleep debt. Improved sleep hygiene can prevent sleep loss and also improve the quality of sleep. Good sleep hygiene involves:

- going to bed when tired,
- following a sleep schedule, even on weekends,
- avoiding eating meals and consuming caffeine or nicotine 2 to 3 hours before bedtime,
- if unable to fall asleep after 20 minutes of trying, going to another room and trying to read until feeling sleepy, then returning to bed,
- exercising daily,
- keeping the bedroom quiet, dark, and at a comfortably cool temperature,
- sleeping on a comfortable and supportive mattress and pillow,
- turning off electronic devices (televisions, tablets, smartphones, laptops, etc.) in the bedroom, especially blue-light emitting screens at least an hour before bed-time,
- maintaining a sleep diary or using smart technology, such as smartphone apps, bedside monitors, and wearable items (including bracelets, smart watches, and headbands) for monitoring sleep, and
- using apps and devices that make white noise, produce light that stimulates melatonin production, and use gentle vibrations to help us sleep and wake.

Repeatedly worrying and discussing loss of sleep is not fruitful. Along with nutrition and exercise, sleep is one of the pillars of health. We simply cannot achieve optimal health without taking care of our sleep. Sleep deprivation is a predominant issue, but it is very much treatable. Treating sleep as a priority, rather than luxury, is an important step towards preventing a number of chronic medical conditions. The cost of poor sleep is much greater than many people understand, as it may have profound consequences for our health in the long run. Thus, we need to become a society that values rest as much as we regard work and efficiency. As more of us prioritize sleep in our lives, this will slowly change, and optimize not only our health but also our productivity. So be part of the revolution and get adequate sleep today.

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