

# Sleep: A 'Wake-up' Call!

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## ABSTRACT

*This report aims to attract attention toward the importance of sleep in medical students and young resident doctors. With growing stress levels among students, sleep problems have become a common affair. Concepts like sleep disorders, chronotypes, indicators of sleep deprivation are worth knowing. As found in a questionnaire-based review, significant gaps in sleep education exist today among medical students. There are many health hazards of sleep deprivation like anxiety, depression, hypertension, obesity, diabetes, increased error rate at work, breast malignancy, decreased dexterity and adverse impact on academic performance that are dealt with in this article. These issues are not covered well in the conventional didactic lectures on 'sleep' in the medical curriculum. The medical profession demands health caregivers to stay up all night and keep working. Hence, the current medical education curriculum should lay special emphasis on sleep education.*

**Keywords:** Chronotype, deprivation, disorder, sleep, students

# Sueño: Una Llamada a 'Despertar'

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## RESUMEN

*Este artículo persigue atraer la atención sobre la importancia de la necesidad de dormir entre los estudiantes de medicina y jóvenes médicos residentes. Con los niveles crecientes de estrés entre los estudiantes, los problemas en torno a dormir se han convertido en un asunto común. Términos tales como trastornos del sueño, cronotipos, e indicadores de falta de sueño, encierran conceptos que vale la pena conocer. Como se indica en un examen basado en un cuestionario, existen hoy lagunas significativas en la educación del sueño entre los estudiantes de medicina. Hay muchos riesgos para la salud como consecuencia de la privación del sueño, tales como ansiedad, depresión, hipertensión, obesidad, diabetes, mayor tasa de error en el trabajo, cáncer de mama, disminución de la destreza e impacto adverso en el rendimiento académico, todos los cuales se tratan en este artículo. Estos temas no se incluyen propiamente en las conferencias didácticas convencionales sobre el 'sueño' en el currículo de medicina. La profesión médica exige que cuidadores de la salud se mantengan despiertos toda la noche y sigan trabajando. Por lo tanto, el currículo de educación médica actual debe poner especial énfasis en la educación del sueño.*

**Palabras claves:** Cronotipo, privación, trastorno, dormir, estudiantes

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## INTRODUCTION

Sleep is such a topic that has meandered through the spiky woods of ignorance trying to seek its due importance. Conventionally, our education system deals with using brain-power, but not on adequate quality sleep which fuels it (1). In

Indian medical schools, the teaching time for sleep is only one or two didactic lectures in physiology and pharmacology (1). Even in the most developed countries, it is 2.1 hours for undergraduates and 4.8 hours for graduates (2).

## Gaps in knowledge

In a questionnaire-based survey of 30 first year postgraduate students (who had just completed their graduation), none had heard of the 'sleep chronotype' concept. Only nine were aware of diseases related to sleep deprivation. Twenty-seven students said that they were subjectively feeling sleep de-

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prived. All 30 students agreed that they tend to underperform when sleep deprived.

### Relevance to medical students

Nocturnal sleep problems were found to be very common in the general population (3) and also among medical students (4). Medical students of both genders are subjected to a lot of stress (5). Their sleep is characterized by insufficiency and delayed sleep onset, followed by day-time sleepiness (6). Moreover, sleep deprivation affects academic performance in medical students (7).

### Circadian rhythm and sleep disorders

The circadian rhythm commanding the sleep-wake cycle is a timing system set by the suprachiasmatic nucleus. This in turn is influenced by light-dark change, physiologic functioning, work schedules, leisure activity and most importantly, social factors (8, 9). It is best to respect this biological clock at any given point in time. This automatic mechanism self-charges the neurotransmitters in the 'sleep phase'. Sleep deprivation alters the neurotransmitters in the brain, leading to an alteration in the sleep-wake cycle. Sleep deprivation is quite common among health caregivers such as residents, nursing staff, interns and medical students. Hence, the circadian rhythm is changed in health caregivers (9).

The common factor between sleep disorders and various psychiatric and psychological disorders is the alteration in the neurotransmitters in the brain. Therefore, it is important for all health caregivers to know some basic sleep disorders like insomnia, narcolepsy, restless leg syndrome, nightmare, night terror, sleepwalking, bruxism and others.

### At what time can I study my best?

Every medical student has the above question on his/her mind. Here comes the concept of 'chronotype'. There are three chronotypes: morning, evening and intermediate types. Persons who possess the morning chronotypes are the ones who start their activities early in the morning. The evening chronotypes are the ones who delay the initiation of activity and the intermediate types, the most common, are not committed to any pattern (8). Depending on the chronotype, one can plan studies and yield good results. Most people have a misconception that they can alter the chronotype by blindly emulating some achiever's study schedule with the hope of achieving similar results. But it is important to know that a chronotype is an 'endogenous' feature of an individual, not subject to any exogenous factor.

One can know one's chronotype by the past experiences (which most readers would know by now) or more objectively by using Horne and Ostburg's Morningness-Eveningness Questionnaire (10).

### How do I know that I am sleep deprived?

It is not a strict rule, but seven to eight hours of sleep are considered adequate for adults (11). An increase in anxiety,

depression (12), increased day-time sleepiness and increased error rate at work are all indirect indicators of sleep deprivation. Also, significant increase in the sleeping hours on weekends denotes that the person is sleep deprived on weekdays (8). Keeping a sleep diary is hence a good idea. This could be done accurately by means of wrist actigraphy. It is a technique which uses a wristwatch sized instrument that is worn around the wrist, hip and leg. It non-invasively measures the gross motor movements for days, weeks, months or years and is used to analyse the sleep disorders.

### Consequences of sleep deprivation

Sleep disorders may be caused by underlying emotional disorders, that is, anxiety or depression, and sleep disorder may worsen each of them (12). Sleep deprivation leads to a drop in academic performance (7), increases day-time sleepiness (13), leads to early fatigue (5), decreases alertness (14) and increases errors at work. In house officers, it affects divergent and creative thinking (15), decreases surgical dexterity (16), and increases errors in healthcare. Nurses on repeated shifts are two to three times more likely to err than their day-time colleagues (17). As found on a simulator, patients too, prefer to be attended by well-rested physicians (16).

Short sleep has been found to be a risk factor for hypertension (18). It also increases gastric ulcers and alters cardiac parameters and body metabolism (19). Another interesting finding is that sleep deprivation increases the risk of breast malignancy and alters reproductive physiology (20). Poor sleep quality has been shown to be both the cause and the effect of Type II diabetes mellitus (21). Short sleep patterns also predate obesity in the future (21). Sleep deprivation decreases anorexigenic hormones like leptin and increases orexigenic hormones like ghrelin. This leads to increased appetite, hyperphagia and increased consumption of a carbohydrate-rich diet (22).

Studies have proven that there is a need to restrict the number of working hours for house staff and other healthcare workers to avert both increased errors at work and adverse health consequences. The current thinking is that the number of continuous waking hours should not be more than 16 hours or more than 65 hours per week (23, 24). There is a message of 'Rest for Safety' being circulated among healthcare professionals, especially among nurses, to prevent the above mentioned health hazards (19).

Thus, we must accept that there is an imminent need to improve sleep education among medical students (1). If doctors today are overworked, then measures have to be taken to have well-rested clinicians. It may mean increasing postgraduate posts, fixed working hours, *etc.* It is time, let us 'wake up' to 'sleep'!

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