INVITED EDITORIAL

Waking up to the importance of sleep: why that extra shut eye is key to medical student wellbeing

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Sleep is one of the most fundamental of all biological needs. And whilst for most of us (depending on how many days out you are from that big exam) sleep seems to be a simple matter of closing our eyes, it’s in fact a complex and wholly active process. Recent decades have seen a notable rise in understanding not only of sleep itself, but the importance that sleep has to our waking lives. Physically and mentally, sleep is vital to functioning at our very best and is a key component of health and wellbeing.

Medical students and doctors have a love-hate relationship with the sandman. Statistics show that medical students struggle when it comes to sleep, reporting higher rates of fatigue, tiredness, truncated sleep, and poor-quality sleep than others.1,2 Similar findings occur in surveys and studies looking into the sleep of doctors. The impact of long shifts, shift work, mental/emotional burdens, and demanding specialty training programmes are staples to medical training, and are theorised to play a major part in disturbed sleep. Alongside these statistics on how well we’re (or not) nap time, the impact of fatigue and inadequate sleep on medical student and doctor performance has also become clear in recent years. As modern medicine barrels forward, we’ve seen that sleep impacts not only on doctors’ and trainees’ cognitive capacity and motor coordination, but their judgment and emotional regulation too. Protecting the sleep of the modern medical student is thus vital in ensuring student, clinician, and patient health and safety.

What is sleep?
The process of sleep involves a well-orchestrated process that links neurobiological, neurochemical, and psychological processes. We now know much more about how the brain regulates our circadian rhythm, sleep/wake cycle, sleep itself, and wakefulness than ever before.3 Ongoing questions and research continue however, offering a clearer view of the complexity around one of our most fascinating, fundamental, and primary functions.

Neurologically, the process of sleep involves more than a mere shutting down of brain function or wakefulness, with sleep versus waking existing as two parallel but deeply interwoven circuits. One seeks to act as the “on” switch, leading to cessation of sleep related processes and an increase in wakefulness; the other acts as the “off” switch to promote sleep onset. Whilst historical views saw sleep as an inactive state of lowered neurological activity, we now know that regardless of how peaceful (or not) it might appear, processes on the inside are anything but restful.

Coordinated and synchronous activation and inactivation of key brain regions are required to both initiate and maintain a healthy night’s sleep. Key areas include the suprachiasmatic nucleus, the hypothalamus, thalamus, brain stem, limbic system, and the frontal cortex.3 Circadian rhythms and ambient light levels offer coordinated triggers for sleep to inhibit regions promoting alertness and wakefulness, and activate regions responsible for the opposite. Numerous neurotransmitters play a key role including serotonin, histamine, melatonin, adrenaline, and acetylcholine.4,5 Influences and feedback from other areas of the body involved in breathing, position, temperature, vision, and the auditory system form further parts of a complex system. As anyone who has lain awake willing away that mental countdown (“if I fall asleep now I’ll get six hours”) knows all too well, psychological and emotional factors play a leading role here too.

Medicine and sleep
We likely didn’t need to tell you this one, but working in medicine poses significant risks to good quality sleep. Stress, anxiety, pressure to perform, heavy workloads, and unrelenting rosters — common features of life in medicine — are just some of the psychological and environmental factors involved. Both during medical school and work as a doctor, factors mount toward a fractured sleep cycle and chronic sleep debt. Medical students and doctors alike have been found more likely than the general population to report disordered sleep and fatigue,5,6 and demanding rotations, study, anxiety around assessments/tests, shift work, long hours, and on call work are often noted as key contributors. Perfectionism, a tendency for obsession and rumination, high levels of drive to succeed, and pressure to be seen as a valued medical colleague are also risk factors for poor sleep and compromised mental health. It seems that even when it comes to lying down, medical students have it tough.

As a path of study and career, medicine demands and selects for precision, empathy and compassion, high performance, motor coordination, and cognitive prowess. Ironically (but not surprisingly), sleep is vital to each of these mental faculties. Increasing evidence outlines the impact that poor and disordered sleep has on mental, motor, and physical processes.1 In environments where communication and connection are as key to outcomes as memory, problem solving, and motor ability, a disregard for sleep within the medical system challenges the very foundation of effective performance and safe patient care.

The importance of sleep in physical and psychological health
Recent decades of research have shown the powerful (and often bidirectional) influence that sleep has toward both our mental and physical wellbeing. More and more, sleep is being seen as a key factor toward a healthy lifestyle. Sleep offers an important influence on the physical body, with research showing a significant impact on nearly every organ system and physical process, and even small but accumulative deficits are theorised to have potentially significant impacts. The evidence is clear that sleep is a vital component to optimal physical and mental functioning; a component that people actually studying those very concepts seem hard pressed to come by.

Sleep deprivation exists as a significant risk factor and influence for many of our most common and disabling physical and mental disor-
Though alcohol can be helpful in relaxation and quicker onset of sleep,2 initially, that evening drink is notorious for causing middle-of-the-night awakening and for fracturing normal sleep cycles. Recommendations for anyone suffering from insomnia always call for the importance of stopping use of alcohol for four to eight weeks to see if alcohol is the primary cause or is making insomnia worse.

A modern-day trend among young people is delaying bedtime due to rising study pressure. In some circles (medicine included) “pulling an all-nighter” and placing work before all else can even become a badge of honour. Though the consequences of occasional sleep deprivation may be minor and short lived, prolonged sleep deprivation (several days or weeks) will result in poorer cognitive performance overall, not to mention risks in driving or poor clinical judgment. If one’s goal is to perform better academically in a sustainable manner, having adequate and refreshing sleep should be part of any study routine.

Blue light devices including mobile phones, tablets, laptops, and computers may be the biggest of all culprits toward our modern-day sleep debt. These devices are known to cause a phase shift in melatonin release, and thus result in delayed sleep onset and potentially poorer quality sleep. It’s no joke to say these devices are toxic when it comes to sleep. In addition, using devices just before sleep can actually result in increased alertness and wakefulness, which further compromise sleep integrity. Combine this with the naturally delayed circadian rhythm of young adults and it’s a powerful combination for a bad night’s rest. Cutting back on blue light exposure two hours before bedtime and instead listening to podcasts or going back to the age-old practice of reading books can help with a quicker sleep onset, and deeper sleep.

A common cause for delayed sleep onset is a very busy mind, and this will be one medical students know all too well. Constantly thinking about how the day went and worrying about exams and assessments actually promotes alertness and inhibits sleep onset. Engaging in mind calming activities half an hour or so prior to sleep can slow down the hectic and busy mind of medical students. Mindfulness meditation, writing a gratitude journal, progressive muscle relaxation, breath-based yoga, Tai Chi, or reading religious or spiritual material before going to bed has been shown to calm the mind and set it up nicely for a solid night’s sleep.

Final word
In the gruelling years of medical training, good quality and adequate sleep should be held as priority. Once in a while, losing sleep because of impending deadlines and assessments can’t be avoided, but we should remember that this should be an exception and not a norm. The consequences of prolonged poor sleep cannot be underestimated, and for those navigating their way through the maze of medical school, getting adequate sleep should be prioritised and protected. When it comes to performing cognitively, emotionally, and physically at our peak, and practising as balanced doctors, we need now more than ever to wake up to the true importance of a good night’s sleep.

References

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