

Good Sleep and Good Health are Natural Bed Partners

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Sleep is time consuming. We spend nearly one-third of our lives asleep, but for what purpose? This is an important question to reflect upon, whether you are a scientist, philosopher, or a person who simply wants to know how to better spend his time. Sleep is generally considered a pillar of good health, yet it is increasingly common in modern society to shortchange oneself of sleep to partake in other activities. Sleep is considered by many as a low-priority health concern, but this is largely due to a failure to understand the importance of sleep for physical and mental health. Below we consider why sleep sometimes fails to get the respect that it deserves.

Firstly, sleep is often viewed as a time when the brain shuts down, when in fact sleep is an active process. The former view persists because we lose consciousness and become unresponsive to the environment during sleep. Not surprisingly, then, sleep has been used as a metaphor for death, in texts ranging from the Iliad to the Bible to works by Shakespeare and Robert Frost. On the face of it, sleep appears as a period of inactivity and lost productivity. In Thomas Edison's words, ¹ "We are always hearing people talk about 'loss of sleep' as a calamity. They better call it loss of time, vitality, and opportunities." While it cannot be denied that sleeping less frees up more time to be awake, sleep does more than simply alleviate sleepiness. Sleep allows the brain to remove metabolic debris, ² and also facilitates memory consolidation. ³ Regarding the latter, in Greek mythology the Lethe, known as the river of forgetfulness, flowed around the cave of Hypnos, the personification of sleep—in hindsight, the river of remembering would have been a more apt description.

It is important to realise that sleep is not merely the antithesis of waking, but rather a complex behaviour that serves multiple functions. In addition to the roles already mentioned for sleep in brain-waste removal and transfer of memories to long-term storage, sleep plays a role in metabolic health. In the short term, sleep loss results in decreased glucose tolerance, and increased sympathetic tone and blood pressure. ⁴ In the long term, short sleep is associated with a higher body mass index and increased

risk for diabetes mellitus and hypertension, ⁵⁻⁸ which are predictors of cardiovascular disease. Short or disrupted sleep has also been linked to impaired immune responses, learning deficits, and mood disorders. ⁹⁻¹¹ For better or for worse, sleep has its fingers in everything. Sleep is a basic physiologic need, and when removed, the body fails to function properly.

It is perhaps ironic that one of the reasons sleep is often overlooked is that it plays such a broad role in maintaining good health, as opposed to serving a singular function. Sleep mediates so many things, and yet seemingly does not explain any single thing. Sleep is the great facilitator working behind the scenes, operating under the cover of darkness. Since the negative effects of sleep loss on health are not usually immediate, advocates for sleep medicine and sleep research face the uphill battle of convincing others that a lifetime of short or poor quality sleep is costly in the long run. A similar scenario has played out for other behaviours that take decades to erode health, e.g. smoking and poor dietary choices. Smoking a cigarette or eating a high-fat meal has no measurable effect on long-term health, but decades of smoking greatly increases risk of lung cancer, and a lifelong history of poor eating habits can eventually lead to heart disease or stroke. To be sure, battles against tobacco and poor food choices have been difficult and are ongoing. The fight for sleep is just beginning, as the evidence continues to build that a lifestyle of short or disrupted sleep increases disease risk and mortality.

What, then, is the scope of the sleep problem in Singapore? That is difficult to answer, as there is little published data on sleep behaviour in Singaporean adults. Given that sleep duration and difficulty initiating and maintaining sleep (i.e. insomnia) are important health indicators, such information could be collected prospectively in the Singapore National Health Survey. ¹² The last investigator-initiated study to examine the prevalence of insomnia was performed in a community sample nearly 20 years ago. ¹³ Based on unpublished surveys of sleep habits that we and others have conducted, most Singaporean students attending junior college or university report sleeping less than 6

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hours per night on school nights, which is substantially less than the amount recommended by the National Sleep Foundation.¹⁴ The persistence of such sleep behaviours into later adulthood could contribute to the growing burden of metabolic disorders and heart disease in Singapore. In the Singapore Chinese Health Study, for example, the relative risk of coronary heart disease was significantly higher in individuals who reported sleeping ≤ 5 hours per night (relative risk = 1.57), relative to those who reported sleeping 7 hours.¹⁵ It appears that sleep is not only for the brain, but also for the heart.

In conclusion, it is important that health officials and physicians in Singapore promote good sleep habits for better health. Depriving oneself of sleep is tantamount to punishing the body, and over time the health consequences can be severe. Looking forward, more data are needed on sleep behaviour across all age groups to better understand how sleep modifies disease risk in the local context. Epidemiologic data collected in Singapore and elsewhere indicate that short sleep is associated with a higher rate of coronary heart disease.¹⁶ Also, shift work, which entails disrupted sleep and circadian rhythms, is associated with increased risk for stroke and some types of cancer.^{17,18} The aforementioned diseases account for more than half of all deaths in Singapore.¹⁹ Sleep is therefore on the shortlist of modifiable risk factors for diseases that impact the lives of Singaporeans. As such, let us work together to spread the gospel of good quality sleep—Singaporeans will be better off for it.

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