Public costs of selling ourselves short on sleep

The rising cost of healthcare and the burden of chronic illness are perennial concerns. Remarkably, there exists a measure that a quarter to a third of city dwellers can implement to reduce their risk of accidents, coronary artery disease, diabetes, cancer and all-cause mortality, while improving their cognitive performance.

Unlike costly supplements or diets, this measure incurs no financial expense and, unlike exercise, requires no exertion. That measure is improving sleep duration and quality.

Sleep and health have a strong bidirectional relationship, meaning that sleep can affect health and vice versa. Short sleep, whether by personal choice, work demands or illness, is a concern in many urbanised societies.

In young adults, short sleep is arbitrarily defined as less than six hours of sleep per night. The adverse effects are multifaceted. Neurobehavioural effects include failure of sustained attention, reduced information processing capacity, impaired memory consolidation, emotional dysregulation and altered decision-making.

Short sleep is associated with increased all-cause mortality, adverse cardiovascular outcomes as well as negative effects on glucose metabolism and an increased propensity to gain weight. Sleepiness increases the risk of transport, medical and industrial accidents. The economic cost of productivity loss and work-related events secondary to sleep loss runs into billions of dollars.

A LOSS BY CHOICE

Despite these facts, a comprehensive time-use study found that most people who sleep less choose to do so. Working, socialising and commuting are the leading activities related to sleep curtailment.

Rural societies do not face the situation where the biological imperative to sleep opposes the
social or cultural reasons to stay awake. Many urban dwellers, on the other hand, consider sleep to be a commodity that can be traded for other activities considered more pressing or of greater value.

The metaphorical story of the frog that could not be tricked into jumping into a boiling cauldron, but nevertheless met its end by entering cold water that was gradually heated, is an apt parallel to prevailing attitudes towards voluntary sleep deprivation.

Why is this the case and what can be done to remedy it?

WHY ATTITUDES ARE MISGUIDED

Human beings typically exhibit overconfidence in their own abilities and almost everyone rates themselves as above average. This has been demonstrated in many walks of life, among investment bankers, doctors, engineers, managers and entrepreneurs alike.

In the spirit of “it won’t happen to me”, having experienced a night or two of significantly shortened sleep without noticeable consequences, many think it fine to continue to chronically curtail sleep in service of career advancement. In truth, fewer than 5 per cent of persons can sleep for about four hours a night on a sustained basis.

Sleep-banking — where the tolerance of a night of sleep deprivation can be improved by extending sleep a few nights prior to deprivation — may be feasible. Conversely, after a few nights of more severe partial sleep deprivation, the average participant loses insight into the extent to which vigilance can degrade.

The real-world effects of cumulative sleep loss were recently demonstrated when medical residents on a three-week night duty rotation evidenced poorer mental performance on their fifth and sixth shifts relative to their first shift.

Turning back to the broader public, a key reason for the lack of urgency in promoting sleep as a risk factor is that negative outcomes of short sleep commonly highlighted — such as coronary artery disease and obesity — are often delayed and may be confounded by co-factors. One is reminded of the metaphor of the frog being slowly boiled.

TIME-BOMB AMONG OUR YOUNG?

The problem of short sleep in the young is pressing in our part of the world. In a meta-analysis of more than 17,000 university students aged 17 to 30 from 27 universities in 24 countries, students from East Asia led the world in reporting short sleep and poor subjective health ratings. This may be a consequence of rooted East Asian collectivist values that remain despite the appearance of modernity. Despite shifting mores, traditional values of hard work continue to inure Asians to long work-hours and short sleep.

Preliminary data from my laboratory indicates that older adults do not differ much in sleep patterns reported elsewhere. In contrast, undergraduates and elite high school students sleep alarmingly less than Western counterparts. They also exhibit greater “social jet lag”, meaning the difference between weekday sleep duration and weekend sleep duration is greater.
As the young have many years ahead of them, the long-term consequence of entrenched lifestyle choices made early in life could have devastating effects in the future.

NOISE AND LIGHT PROBLEM

Apart from changing personal attitudes, there is a need to focus on environmental factors that can disrupt sleep. Environmental noise is poorly regulated in Asia. Elevated transport-related noise interferes with sleep and increases the rate of cardiovascular morbidity. Far less is known about construction noise and little research is conducted in Asia where this problem is more widespread.

Another environmental factor that can be improved on is the use of lighting at night. Three decades ago, it would be unusual to have late night shopping in all but the largest Asian cities. Today, brightly lit malls litter the city-scape. Bright light at night can cause a phase shift, delaying sleep onset. This can compound the effect of reduced time for sleep.

WHITHER GUIDELINES?

Guidelines about sleep duration need to be customised and refined — unfortunately, this is going to take some time. Policymakers seeking to establish norms for “the right amount” of nocturnal sleep face a challenging task. They need to reconcile findings from small laboratory-based studies that evaluate changes in cognitive performance in controlled settings, and large questionnaire-based surveys that evaluate rather crude, long-term outcomes.

Conclusions drawn from cross-sectional studies that highlight the risks associated with short sleep need to be backed up by longitudinal or intervention studies capable of establishing the benefits of restoring sleep duration in short sleepers.

Conflicting data requires thoughtful resolution. For example, in spite of robust laboratory-based studies that suggest memory consolidation (strengthening and development of resistance to interference) occurs when we sleep, two recent studies involving one week of sleep restriction in middle school participants failed to find a negative effect on memory.

It could well be that teens may be more resilient than we imagined. For instance, the little sleep they do get may contain sleep structure adaptations that allow them to cope. It would be assuring if this were true, but clear evidence must first be collected.

It took decades before the health hazards of tobacco consumption were assessed to outweigh business interests, and a similar story is evolving for sweetened soft drinks. It is just a matter of time before sleep assumes similar gravitas in the public mind.

But for that day to dawn, more need to acknowledge short sleep as the proverbial elephant in the room — something too big to be left unaddressed.

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