



Sleep and mental wellbeing: exploring the links

Like most physiological functions, the length and quality of sleep is influenced by a host of biological, environmental and lifestyle factors. Across all age groups, poor sleeping patterns have been linked to poorer current and future mental health.

In 2017, VicHealth commissioned the Sleep Health Foundation to conduct a rapid review of recent research in the areas of:

- population-level sleep patterns
- the evidence for how these patterns affect mental wellbeing
- the role of lifestyle factors in sleep disturbances
- effective behavioural interventions to improve sleep in young people.

The review related to Australian and Victorian populations in general, but where possible attempted to draw out specific evidence and conclusions relevant to young people (adolescents and young adults between the ages of 12 and 25).

The report focused on behavioural factors, rather than genetic pre-dispositions or pharmacological interventions, because these are able to be altered by individuals. This means practical information can be provided to young people and their families, other caregivers (including teachers), health professionals and policymakers.

Why focus on young people?

While poor sleep is associated with an increased risk of depression across all age groups, adolescents and young adults may be particularly susceptible to the effect of poor sleep on mental wellbeing.

The risk of depression increases with age throughout adolescence, especially for those with short sleep duration or poor sleep quality. Sleep problems during childhood and adolescence are predictive of depression later in life.

Research shows that sleep disturbances among adolescents can affect their ability to regulate emotions and increase the risk of anxiety, low self-esteem, disturbed mood and fatigue. They are also associated with suicidal thoughts and actions among this group.

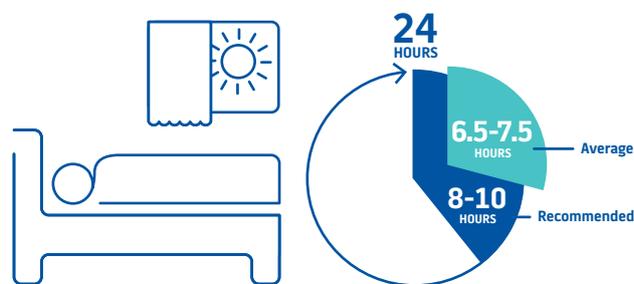
Table 1: Sleep recommendations by age



Source: US National Sleep Foundation, 2015.

Are young people getting enough sleep?

The US National Sleep Foundation has published sleep recommendations for age groups across the lifespan (see Table 1). These recommendations highlight that as people get older, they generally need less sleep. In line with this, research shows that among Australian children aged 9 to 18 years, school-night sleep duration decreases at a rate of 12 minutes per year. Data from Victoria and South Australia shows adolescents are only getting an average of between 6.5 and 7.5 hours of sleep on school nights, rather than the recommended 8–10 hours.



Adolescents are only getting between 6.5 and 7.5 hours of sleep on school nights

Adolescents have a biological tendency towards later 'sleep timing' – that is, they are inclined to go to bed later and sleep in – and this is what occurs on weekends and during school holidays. During these periods, adolescents achieve significantly more sleep: up to 90 minutes more per night on weekends and 40–120 minutes more during school holidays. These findings suggest that school start times conflict with adolescents' natural patterns of sleep, and many in this group might sleep longer during the week if allowed the opportunity.

Adolescents' natural tendency to go to bed later and 'sleep in' may conflict with school start times.

A 2016 survey of young Australian adults found average weeknight sleep duration (7 hours 14 minutes) was just inside recommended levels, but this average was extended by 71 minutes on weekends. This, along with a finding that more than half of university students are likely to nap at least once or twice a week, suggests that many young adults may also be missing out on needed sleep during the week.



Longer weekend sleep times suggest many young adults may be missing out on needed sleep during the week

Sleep problems are common

Occurring throughout the lifespan, sleep problems and disorders range from mild to severe, and short to long term. Insomnia and Delayed Sleep-Wake Phase Disorder (DSWPD) are two common sleep disorders affecting young Australians (see below). However, many people have impaired sleep without meeting diagnostic criteria for a sleep disorder. For example, among surveyed adolescents in Adelaide, two-thirds (66%) reported at least one symptom of a sleep disorder, although less than a quarter (23%) believed they had a sleep problem.

Insomnia

Insomnia can include issues such as difficulty falling asleep or staying asleep, or waking early in the morning and not being able to go back to sleep.

People experiencing insomnia may wake feeling unrefreshed, be tired during the day, have difficulty concentrating and/or feel irritable, and these symptoms can cause distress or impairment in everyday activities.

The prevalence of severe clinical insomnia is highest among young Australians aged between 18 and 24 years (affecting 11% in this age group) and many more (up to 66%) experience symptoms of insomnia.

Delayed Sleep-Wake Phase Disorder

Delayed Sleep-Wake Phase Disorder (DSWPD) affects the body's natural rhythm of sleep and wakefulness. In DSWPD the body clock is shifted, and those affected fall asleep and wake up later than society's norms suggest they should.

The disorder is most common among adolescents, affecting 1 in 100 Australians of this age, although up to 52% meet at least one of the diagnostic criteria.

Adolescents with DSWPD may not be able to fall asleep early enough to obtain sufficient sleep on school nights, and waking in time for school may be difficult or impossible.

Behavioural and environmental influences

While there is a genetic basis to people's sleep patterns, behavioural and environmental factors also contribute. While a number of these may be important across the lifespan, some may be particularly important in benefiting or disrupting the sleep patterns of young people.



Technology use, caffeine consumption and stress may contribute to later bedtimes and sleep difficulties among young people



Parent-set bedtimes, physical exercise and positive social interactions may contribute to young people achieving earlier bedtimes and longer sleep times

Technology

Technology use is undoubtedly high among adolescents and young adults, particularly before bedtime, and is frequently claimed to impair the sleep of this age group. Although differences in study design make generalisations difficult, playing video games, computer and internet use, and ownership of interactive mobile devices have all been associated with later bedtimes and possibly shorter sleep duration among young people. However, experiments are needed to clarify the cause and effect of devices on sleep.

Caffeine

Caffeine consumption is increasing among adolescents, and increased intake has been associated with decreased sleep duration, more awakenings after sleep onset and increased tiredness during the day. Caffeine may block an important sleep-promoting hormone in the brain, and high doses can result in nervousness, restlessness and sleeplessness. However, it is not clear whether adolescents who sleep less and are more tired use caffeine to promote alertness, or whether sleep is disrupted as a direct result of caffeine consumption.

Family and peer factors

A good family environment has been linked with improved sleep quality, earlier bedtime, falling asleep more quickly and longer sleep duration. Conversely, greater conflict in late childhood is related to sleep problems in early adolescence.

A Melbourne study involving high school students found that 'family time' during the school week was associated with bedtimes that were 15 minutes earlier, and 15 minutes more sleep at night. Parent-set bedtimes may also benefit sleep time and daytime tiredness. This reflects evidence for good 'sleep hygiene': having a regular bedtime, relaxing before bed, avoiding evening stimulants (such as caffeine) and having a comfortable sleep environment.

Beyond the family environment, peers represent an important component of adolescents' lives. Loneliness and difficulties interacting with peers are associated with increased sleep problems and, conversely, positive peer interactions may benefit sleep.

Extracurricular activities and homework

While some studies have suggested that greater homework loads or part-time work influence sleep patterns in young people, no consistent relationship has been found.

Physical activity may be related to earlier bedtimes and better sleep quality and quantity, although the timing of activity may be a critical factor in determining its effect on adolescents and young adults.

Changing behaviours to improve sleep

While the lifestyle factors mentioned have been correlated with better or worse sleeping patterns, more research is needed to investigate whether they cause these effects, particularly among young people, and whether changing these behaviours improves sleep patterns.

For people with diagnosed sleep disorders (e.g. clinical insomnia and DSWPD), there is evidence that clinical interventions, delivered by trained health care professionals, are likely to be helpful. As well as being an effective treatment for clinical insomnia, cognitive behavioural therapy (CBT) can improve the sleep and mental health of other adolescents and young adults with sleep problems.

However, other, low-intensity interventions may also improve the sleep of young people who experience some aspects of poor sleep. Some of these strategies require less specialised knowledge and training to deliver than clinical interventions, and represent promising avenues for improving the sleep of young people.

Sleep hygiene

Sleep hygiene interventions can include information sessions and lectures, and one-to-one or group discussions. They can be delivered either in person or online. Designed to inform people about good sleep hygiene practices, they are often provided as a 'once-off' session.

Among university students, sleep hygiene interventions have been shown to improve sleep duration and the time taken to fall asleep.

What is sleep hygiene?

| INCLUDES | |
|---|---------------------------------|
|  | A regular bedtime and wake time |
|  | Relaxing before bed |
|  | Avoiding evening stimulants |
|  | Comfortable sleep environment |
| BENEFITS FOR YOUNG PEOPLE | |
|  | Earlier bedtimes |
|  | Less trouble falling asleep |
|  | Longer sleep |

Relaxation and mindfulness

There is significant variation in the design of relaxation or mindfulness interventions aiming to improve sleep (e.g. mindfulness sessions involving a breathing focus, guided meditation, muscle relaxation techniques, listening to classical music or hypnosis). However, there is evidence that such interventions can provide modest benefits relating to various aspects of sleep quality.

Pre-bed phone restriction

One recent South Australian study asked adolescents to stop using their phone one hour before bedtime on school nights (after a week of baseline or 'usual' sleep habits). During the intervention, the subjects maintained the same bedtime, but turned their lights out 17 minutes earlier, and obtained an average of 21 extra minutes of sleep per night – gaining 1 hour and 45 minutes of sleep over the school week.



Teenagers who stopped using their phones just one hour before bedtime gained 1 hour and 45 minutes extra sleep over a school week

Can school-based programs help?

Overall, school-based sleep programs provide a promising platform for educating adolescents about sleep and support behavioural interventions (e.g. improved sleep hygiene, relaxation techniques). However, while they promote short-term benefits, research does not currently indicate that they facilitate long-term changes, and further development is required before they are able to consistently alter sleep and mental health in young people.

Table 2: Effect of different sleep interventions on mental health of young people

| Type of intervention | Size of positive effect on mental wellbeing | Group studied |
|--|---|-------------------------------------|
| Cognitive Behavioural Therapy for insomnia | Large for depression Small for anxiety | High school students |
| Cognitive Behavioural Therapy for insomnia | Medium | University students |
| Sleep hygiene | Small | University students |
| Relaxation techniques | Large | University students |
| Bright light therapy | Small to medium | University and high school students |
| School-based interventions | Large | High school students |

Conclusions

Research shows a clear link between sleep and mental health: better sleep is associated with mental wellbeing across the lifespan. Adolescents may be particularly vulnerable to mental health issues, as they often don't achieve minimum sleep recommendations during the school week. On a more positive note, adolescence is a key life stage transition where healthy behaviours, including those relating to sleep, can be established.

Good sleep hygiene and phone restriction for just an hour before bedtime are likely to benefit adolescents' sleep, especially on school nights.

For clinical sleep problems, specific interventions delivered by trained health professionals are likely to provide the most effective treatment. However, a number of simple, low-intensity interventions may improve the sleep of many young people who experience some aspects of poor sleep.

More research is required to further investigate the relationships between lifestyle factors and sleep, especially among young people. However, good sleep hygiene, relaxation and mindfulness activities, and phone restriction (an hour before bedtime) are likely to benefit adolescents' sleep, especially on school nights.

For full references and citations for the data presented in this summary, please see the full report, available for download from the VicHealth website at: www.vichealth.vic.gov.au/sleep



Victorian Health Promotion Foundation
PO Box 154 Carlton South
Victoria 3053 Australia
T +61 3 9667 1333 F +61 3 9667 1375

vichealth@vichealth.vic.gov.au
vichealth.vic.gov.au
twitter.com/vichealth
facebook.com/vichealth

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