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whakamana i te tamaiti

why sleep matters
for rangatahi

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There is a lot going on for rangatahi during their adolescence. It is a time of amazing development, change, opportunity, and some vulnerability too. How this development unfolds, and how well rangatahi are set up to face their future, depends on many factors. One of these is sleep. This article explores what we know about sleep and rangatahi.

Sleep is important for all of us, but even more so during periods of heightened brain development, including adolescence.[1] Healthy development depends on a number of things, but the importance of having enough sleep is clear.[2]

Consequences of not having enough sleep are more far-reaching than just feeling tired the next day.[3]

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How much sleep do rangatahi need, and, how much are they getting?

It is widely considered that rangatahi need 8-10 hours of sleep per night so they can develop and function at their best.[4] Recommendations from the NZ Ministry of Health reflect this.[5]

However, in New Zealand and across the globe, a large number of adolescents fall far short of this.[6] Some reports indicate that, on average, 12-18 year olds are sleeping for fewer than 7 hours per night during the week.[7] Studies in Aotearoa found that many rangatahi, (from a third to more than half), reported poor quality, or not enough, sleep.[8]

What changes in adolescence?

Most of us are aware that sleep patterns change in adolescence, whether it is from our own distant memories of sleeping in or from not seeing our rangatahi before lunchtime on the weekend. Understanding more about

1. Becker at al.,2015; Galván, 2020
2. Agostini & Centofanti, 2021
3. Gradisar et al., 2011, cited by Bartel et al., 2015
4. Galván, 2020; Short et al.,2020
5. Ministry of Health: Manatu Hauora, 2018
6. Short et al., 2020
7. Galván, 2020
8. Fernando et al., 2013; Galland et al., 2017

why this happens can help us to support our rangatahi. Both biological and social factors contribute to changes in sleep patterns that can mean rangatahi sleep differently from tamariki.[9]

1. Social changes

Things like more homework, out-of-school activities, spending more time with their friends, part-time mahi, and increasing freedom from parents[10] mean rangatahi tend to go to bed later and later. As they get older, parents often leave them to manage their own bedtime, and their use of electronic devices, which also influences their sleep habits.[11]

2. Biological changes

But it's not just about their busy lives. Their bodies are also driving a later bedtime. Two aspects of sleep biology that change as puberty begins are (1) the homeostatic drive to sleep, and (2) delayed circadian rhythms.[12] Let's have a look at what these mean.

Usually, the longer we are awake the stronger our need to sleep, and during sleep this need declines.[13] This is called sleep pressure (or, the homeostatic drive to sleep). Sleep pressure builds up more slowly for rangatahi, which means they don't start to feel tired until later in the evening.[14]

Circadian rhythms, which are our "internally generated daily cycles"[15], or our body and brains' patterns of wanting to sleep and wake, vary over each period of approximately 24 hours.[16] But they are not just about being asleep or awake - they also control things like our mental alertness and our awareness of day & night. They are part of a complicated system that manages our sleep/wake behaviour.[17]

Melatonin is a hormone that lets our bodies know when it is night-time.[18] During adolescence this is produced increasingly later at night, delaying our circadian rhythm.[19] This means that rangatahi tend to not feel sleepy until later at night, and then they find it harder to get out of bed in the morning.[20] It might help when adults remember that it is actually biologically harder for rangatahi to wake up in the morning.

As a result, adolescents' sleep cycle may shift by up to 2 hours compared to with middle childhood.[21] This shifts back again by early adulthood.[22]

Effects of poor sleep

Not getting enough sleep can affect many areas of adolescent health and development. These include physiological, psychological, psychosocial, and cognitive effects.[23] Simply put, "sleep affects everything."[24]

Rangatahi feel the effects of reduced sleep even more than adults do. This is because they have a greater need for sleep, and the ongoing development of their prefrontal cortex (PFC) may mean they don't cope as well with a lack of sleep.[25] For these reasons, when rangatahi do not have enough sleep, their behaviour is more likely to be affected than adults with the same lack of sleep.[26]

Two aspects of this that we have looked at are mental health and risk-taking.

> Sleep has consistently been associated with mental health among rangatahi.

a) Sleep and mental health

Adolescence is a particularly vulnerable time for developing mental health disorders.[27] Of adults who experience mental illness, around three-quarters of them begin to show signs of their illness before they are 24 years old.[28]

Many factors influence the mental health of our rangatahi; some of these can be changed, while others cannot. Sleep is one area where we can support rangatahi, thereby supporting their mental health.

Sleep has consistently been associated with mental health among rangatahi.[29] Sleep problems increase their risk for a range of poorer mental health outcomes, including anxiety and depression.[30]

9. Agostini & Centofanti, 2021; Khor et al., 2021
10. Agostini & Centofanti, 2021
11. Short et al., 2020
12. Galland et al., 2020; Galván, 2020
13. Borbely, 1982, cited by Agostini & Centofanti, 2021
14. Becker et al., 2015; Galland et al., 2020; Galván, 2020; Short et al., 2020
15. Foster, 2020, p. 1
16. Agostini & Centofanti, 2021
17. Crowley et al., 2007
18. Blakemore, 2018
19. Blakemore, 2018; Galván, 2020; Short et al., 2020
20. Blakemore, 2018
21. Galván, 2020
22. Gariepy et al., 2020
23. Sleep Health Foundation, 2020
24. Ginsburg & Jablow, 2011, p. 248
25. Short et al., 2018
26. Galván, 2020
27. Agostini & Centofanti, 2021
28. Kessler et al., 2007, cited by Andrews et al., 2020
29. Agostini & Centofanti, 2021
30. Becker et al., 2015; Fernando et al., 2013

Lack of sleep affects the brain regions involved in mood and emotion regulation.

A large study, of more than 360,000 adolescents, found that not getting enough sleep contributed to a range of mood deficits in otherwise healthy rangatahi. Problems with their mood increased by 55% for those getting less sleep. Issues they faced included depression, anxiety, anger, less positive affect (similar to feelings), and more negative affect. The largest effect was on positive mood, suggesting that one way in which lack of sleep affects mental health is through feeling less enjoyment or pleasure.[31]

Lack of sleep affects the brain regions involved in mood and emotion regulation. It has been associated with less activity in the prefrontal cortex (involved in planning and decision-making) and also less connectivity between the prefrontal cortex and the limbic regions (our emotional centre).[32] This is particularly important given the huge amount of brain development that occurs in adolescence. Rangatahi, especially in early adolescence, tend to feel their emotions more strongly than they did as tamariki; not having enough sleep can make this more pronounced.

Rangatahi who are not getting enough sleep are at higher risk of self-harming behaviours compared with rangatahi who get enough sleep.[33] Growing research indicates that disturbed sleep is also associated with increased suicide risk.[34] Many things influence whether a rangatahi will self-harm or attempt suicide, but improving their sleep is one thing that can lower this risk.

The relationship between mental health and sleep is complex, with each affecting the other.[35] In other words, poor sleep can affect mental health negatively, but mental health issues can also make sleep difficult. Sleep difficulties can be a symptom of a mental health disorder,[36] but can occur for other reasons too. At times it can be hard to "tease out" what is what but there is no doubt that it is helpful if rangatahi can be supported to sleep 8-10 hours a night where possible. Sometimes rangatahi and their whānau will benefit from seeking help.

b) Sleep & Risk-taking

The way we respond to "rewards" or good feelings and how much we are likely to take risks to get those rewards usually intensifies during adolescence, because related areas of the brain are undergoing considerable development.[37] When rangatahi do not have enough sleep risk-taking can escalate.[38]

Research has found a number of behaviours that put health at risk increases among those with sleep problems. These include drink-driving and other unsafe road behaviours (e.g. texting, seatbelt use); unprotected sex and other sexual risk-taking; violence; alcohol and other substance use.[39] These increase the risk of harm or injury to rangatahi.[40]

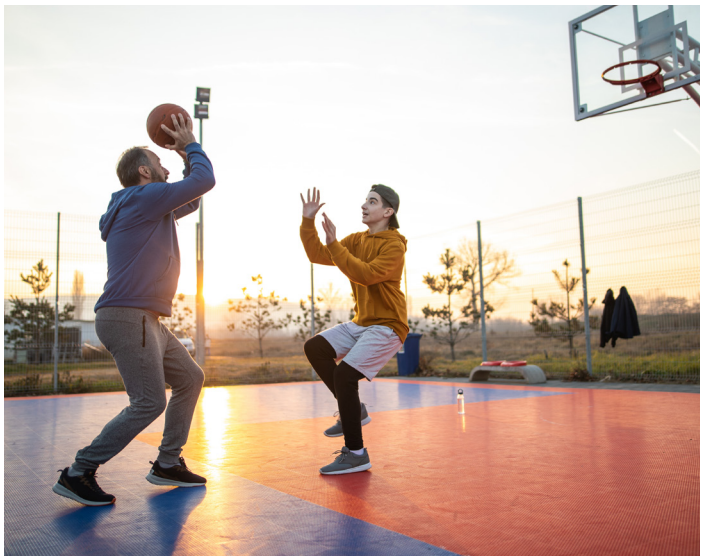
What can help?

Research has found a number of things that help rangatahi get enough quality sleep.

As in other areas of rangatahi development, parents and whānau play an important role. When whānau have a warm and positive family environment, model good sleep practices themselves, and have input around bedtimes and technology usage, this supports rangatahi sleep.[41]

Good sleep habits (sometimes called "sleep hygiene") have been associated with earlier bedtimes, falling asleep more quickly and sleeping for a longer time.[42] This includes having a relaxing routine before bed, and if possible using their bed just for sleeping (i.e. not for study or using social media).[43]

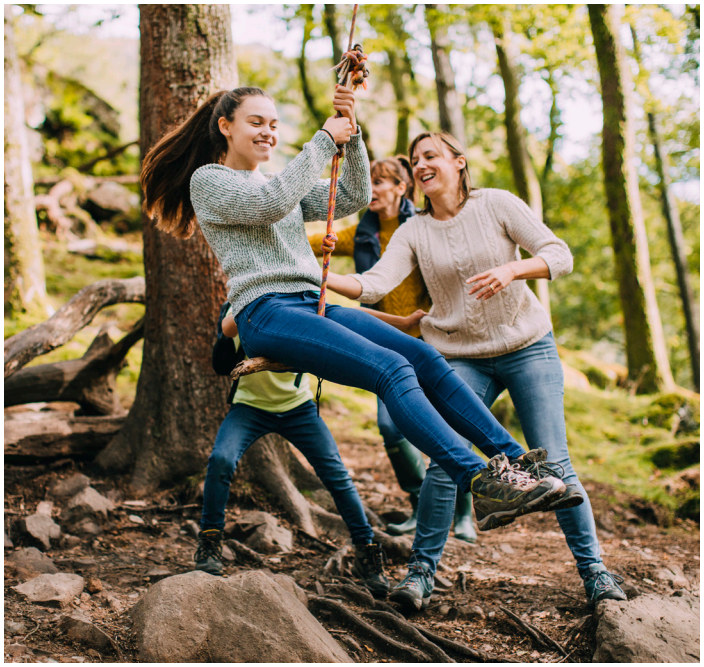
Daytime behaviours can also affect how well rangatahi sleep. For example, rangatahi who are regularly physically active tend to get enough sleep.[44] Physical activity has been associated with earlier bedtimes, and with better quality sleep.[45] This is best done not too close to bedtime.[46]



Other things that support better sleep include avoiding caffeinated drinks after dinner and reducing technology use before bed. Technology use can increase physiological arousal, disrupt sleep patterns and further delay the circadian rhythm, all of which make it harder to fall asleep.[47]

Although rangatahi do need more independence as they grow, there is still a need for adults to encourage behaviours like exercise, not staying up too late, regular sleep and wake times and not using devices late at night etc. This will stand rangatahi in good stead to get the sleep that is so critical for their healthy development.

31. Short et al., 2020
32. Yoo et al., 2007, cited by Short et al., 2020
33. Khazaie et al., 2021
34. Porras-Segovia et al., 2019
35. Becker et al., 2015; Short et al., 2020
36. Becker et al., 2015
37. Galván, 2020
38. Short & Weber, 2018
39. Shochat et al., 2014; Short & Weber, 2018
40. Snyder, 2020
41. Khor et al., 2021; Short et al., 2020
42. Bartel et al., 2015
43. Ginsburg, 2018
44. Patte et al., 2018
45. Bartel et al., 2015; Lang et al., 2016
46. Ginsburg & Jablow, 2011
47. Bartel et al., 2015; Galland et al., 2017
48. Blakemore, 2018; Gariepy et al., 2020



Social jetlag

The tendency of many rangatahi to wake early on weekday mornings and then sleep in on weekends, leading to inconsistent sleep times can result in "social jet-lag"[48], so-called because it is similar to the feeling of "jet-lag" that can happen when we move into different time zones during travel.

While it may seem like a good idea, catching up on missed sleep during the week by sleeping in on the weekend can disrupt teen's circadian rhythms, making it even harder for them to get the sleep they need.[49] More social jetlag is linked with poorer academic performance as well as health, behavioural and cognitive issues.[50] It can also make falling asleep on Sunday nights more difficult, meaning rangatahi start their week sleep-deprived instead of rested.[51] Maintaining regular sleep and wake times across school nights and weekends is more beneficial for rangatahi.[52]

Sleep and adversity

One last thing to note is that all rangatahi need enough sleep to grow and function well, but some face additional challenges. Those who have experienced adversity or trauma are more likely to have disturbed sleep.[53] As this can put them at even greater disadvantage, adult guidance may be even more important.

Conclusions

Having enough sleep is important for many areas of health and well-being throughout our lives. This is especially true during periods of greater brain development, such as adolescence.

Sleep patterns usually change during adolescence, due to both social and biological changes; this can make getting the sleep rangatahi need, more difficult.

Supporting rangatahi to have enough sleep can enhance their health, development and well-being. This is important for all rangatahi, but especially for those facing additional challenges such as mental ill health and a history of adversity.

49. Steenekamp et al., 2021
50. Gariepy et al., 2020; Smarr & Schirmer, 2018, cited by Crowley et al., 2018
51. Agostini & Centofanti, 2021
52. Short et al., 2020
53. Fellman et al., 2021

Glossary of Māori words

Mahi	work
Tamariki	children
Rangatahi	youth, younger generation

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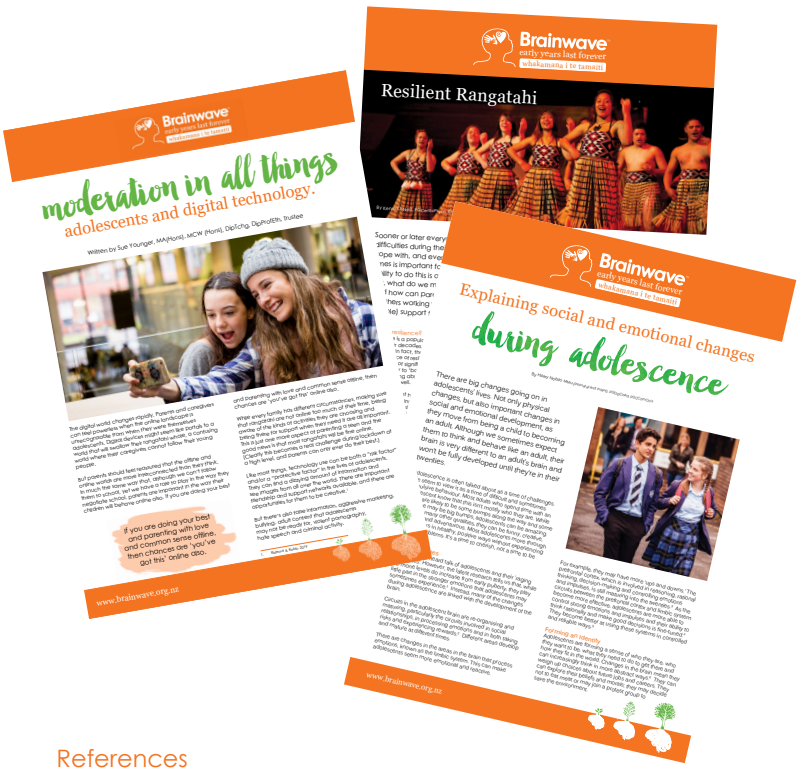

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