

13 SLEEP PROBLEMS

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Key points

- Not getting enough sleep or getting poor quality sleep affects how we feel and function during the day.
- Two of the most common sleeping problems are insomnia and obstructive sleep apnoea syndrome (OSAS).
- Māori are more likely to suffer from insomnia and OSAS than non-Māori.
- Māori have more risk factors for the development of sleep problems than non-Māori.
- Disparities in sleep problems between Māori and non-Māori may impact on disparities in other health outcomes.
- Māori needs should be prioritised in the development, planning, and purchase of sleep services. Services need to be appropriate and accessible to Māori.
- Sleeping problems contribute to the overall health status inequalities between Māori and non-Māori in New Zealand. Fundamental approaches to addressing disparities in health between Māori and non-Māori are also likely to contribute to reducing disparities in sleep disorders.

In 2001, 33% of Māori aged 20–59 years reported having a current sleeping problem and 29% reported a sleeping problem lasting 6 months or more (Paine et al 2005).

“Good sleep is vital to our waking function and to our health” (Gander 2003 p. 81). Insufficient sleep, or poor quality sleep, can impair the way a person feels and functions (Dinges and Kribbs 1991; National Commission on Sleep Disorders 1993; Dinges et al 1997). It has also been linked to an increased risk of accidents and illness, and decreased quality of life (Mitler et al 1988; National Commission on Sleep Disorders 1993; Mitler et al 2000; Pollmacher et al 2000). There is a growing recognition that inadequate sleep is a major public health issue.

The study of sleep and sleep disorders is a relatively new discipline. In Aotearoa/ New Zealand there are limited services for the diagnosis and treatment of sleep related problems. There are a wide range of causes for inadequate sleep, ranging from problems with the body’s sleep clock and other illnesses to social pressures and demands (e.g., having to work non-standard hours (Mitler et al 2000)). Currently, more than 80 different sleep disorders have been identified (American Sleep Disorders Association 1997).

Māori are disproportionately affected by a number of risk factors and negative health consequences associated with sleep problems. A recent series of studies undertaken by Te Rōpū Rangahau Hauora a Eru Pōmare and the Sleep/Wake Research Centre were designed to assess how many people were affected by common sleep problems in

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Aotearoa/New Zealand (Paine et al 2004, 2005; Harris 2003; Mihaere et al 2003; Mihaere 2004).

- The first was a national survey of 10,000 adults (5,500 of Māori descent and 4,500 non-Māori) aged 30–59, to estimate the prevalence of obstructive sleep apnoea syndrome (OSAS) symptoms and risk factors, carried out in 1999 (Harris 2003; Gander et al 2005a,b).
- The second was a community study of 364 adults (169 Māori and 195 non-Māori) aged 30–59 that included overnight monitoring of participants to objectively measure the prevalence of breathing disturbances during sleep, carried out in 2000 (Mihaere et al 2003, Mihaere 2004).
- The third was another national survey of 4,000 adults (2,100 of Māori descent and 1,900 non-Māori) aged 20–59 years to estimate the prevalence of chronic sleep problems and insomnia symptoms, carried out in 2001 (Paine et al 2004, 2005).

These studies specifically sought to prioritise the needs of Māori and utilised the kaupapa Māori research principle of equal explanatory power (Robson 2002; Harris 2003).

Insomnia

In 1996 the World Health Organization recognised insomnia as a significant public health issue with potentially serious consequences for health, safety, quality of life, and high human and economic costs (Costa e Silva 1999). Insomnia is a set of symptoms and commonly includes having trouble falling asleep, repeatedly waking up, having trouble getting back to sleep, waking up too early in the morning, and waking in the morning not feeling refreshed (American Sleep Disorders Association 1997).

Insomnia can have wide ranging and sometimes multiple causes such as: physical/psychological factors (chronic pain, physical or mental illness, dependence on alcohol or other drugs, genetically-inherited sleep disorders); social/psychological factors (having a new baby, losing your job, bereavement); and environmental factors (excessive heat, noisy neighbours, food allergies, high altitude) (Gander 2003). Since insomnia has many causes it is vital that these are identified before suitable treatment can be provided (American Psychiatric Association 1993; Langer et al 1999). The most common medical response is the prescription of sleeping tablets, and often other measures are not considered. The adverse effects of sleeping tablet use are well documented (Langer et al 1999) and there is a consensus among sleep specialists that efforts should be made to limit the duration of their use (Walsh and Ustan 1999). Alternative therapies may include relaxation techniques, sleep hygiene education, and cognitive-behavioural therapy (see Langer et al 1999).

Results of the national New Zealand insomnia survey (response rate 72.5%) showed that the prevalence of insomnia symptoms was significantly higher for Māori than non-Māori (Paine et al 2004, 2005). Table 13.1 summarises the results. Insomnia symptoms were commonly reported by study participants although all symptoms were significantly higher among Māori than non-Māori. The most frequently reported sleep complaint for both groups was never or rarely waking refreshed (59.1% among Māori

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and 53.8% among non-Māori). Māori were also more likely to report chronic sleep problems (lasting more than six months) than non-Māori (28.6% versus 24.6%, $p=0.033$).

Table 13.1: New Zealand population prevalences of insomnia symptoms for 20–59 year olds by ethnicity, 2001

Insomnia symptom	Māori % (95% CI)	Non-Māori % (95% CI)
Often/always have difficulty falling asleep	36.5 (33.2–39.8)	28.7 (26.4–30.9)
Wake three or more times during the night	28.4 (25.3–31.4)	20.8 (18.8–22.8)
Difficulty falling back to sleep	53.0 (49.6–56.4)	48.6 (46.2–51.1)
Often/always wake too early in the morning	48.8 (45.3–52.2)	38.0 (35.6–40.4)
Never/rarely wake refreshed	59.1 (55.9–62.4)	53.8 (51.4–56.3)

Source: National New Zealand Insomnia Survey (Paine et al 2004, 2005)

The insomnia prevalence study also found that people who had symptoms of insomnia or a chronic sleeping problem were more likely to report that their general health, quality of life, concentration, and memory were only fair or poor, that their ability to cope with minor problems, or to accomplish daily tasks was impaired, and that they had difficulty with interpersonal relationships (Paine et al 2004, 2005). These findings remained significant after taking into account demographic and socioeconomic factors.

Socioeconomic deprivation, unemployment, and nightwork were also associated with reporting insomnia symptoms and sleeping problems. These factors are disproportionately higher among Māori (Paine et al 2004; Ministry of Health 2006) and may contribute to inequalities in insomnia and sleep problems.

Other New Zealand evidence has found relationships between measures of inadequate sleep or sleep disorders and motor vehicle accidents and work injury (Gander et al 2005a, Connor et al 2002, Fransen et al 2006), both of which are higher among Māori (Ministry of Social Development 2006; Driscoll et al 2004).

Obstructive sleep apnoea syndrome

Obstructive sleep apnoea syndrome is common in adults and is associated with significant morbidity and mortality. It is characterised by repeated pauses in breathing during sleep when the upper airway collapses as people relax into sleep. The brain then wakes the person up to make them start breathing again. However, as soon as they relax back into sleep the whole process repeats itself and may occur many times during the night. The most common symptoms of OSAS are snoring (usually loudly), excessive daytime sleepiness, and stopping breathing during sleep. People with severe OSAS are often very sleepy, because the quality of their sleep is disturbed by the brief awakenings through the night to start breathing again.

Obstructive sleep apnoea (OSA) is defined by the number of upper airway obstructions per hour of sleep. When these are combined with symptoms such as daytime sleepiness the term OSAS is used to indicate a clinical entity. Sometimes OSA and OSAS are used interchangeably. OSAS has been linked to increased risk of high blood pressure, heart disease and stroke, excessive daytime sleepiness, and motor vehicle accidents (Young et al 2002) all of which disproportionately affect Māori (Paine et al 2005; Ministry of Health 2006; Gentles et al 2006; Ministry of Social Development 2006).

The best test for the diagnosis of OSAS is polysomnography (PSG).¹ There are a variety of treatment options available for OSAS (Kryger 2000), with the most common being nasal Continuous Positive Airway Pressure (nCPAP), which delivers pressurised air through a small nasal mask to keep the upper airway open during sleep. In select cases other methods of treatment may be indicated such as dental devices, surgery, or drug therapy. General management may also include weight loss, sleep hygiene advice, and smoking cessation.

OSAS can occur at any age but most patients present between 40–65 years. The prevalence of OSAS is commonly quoted to be approximately 4% in men and 2% in women (Young et al 1993; Partinen and Hublin 2000). New Zealand evidence indicates that Māori have a higher prevalence of OSAS than non-Māori. Sleep clinics in New Zealand have reported that Māori patients often present with more severe OSAS (Baldwin et al 1998; Frith and Cant 1985). The prevalence of obesity, one of the strongest risk factors for OSAS, is higher in Māori than non-Māori (Ministry of Health 2006). Māori/non-Māori disparities in OSAS symptoms, risk factors, and breathing disturbances have also been demonstrated in population-based studies as described below.

Results of the national survey on OSAS symptoms and risk factors (response rate 70.5%), showed that Māori had significantly higher prevalences than non-Māori (Harris 2003). Amongst both men and women, Māori had significantly higher prevalences of OSAS symptoms, snoring always, observed apnoeas (being told they had stopped breathing during sleep), and excessive daytime sleepiness² than non-Māori (Table 13.2). Māori men had a significantly larger mean neck size than non-Māori men (41.98 cm versus 40.15 cm, $p < 0.0001$), as did Māori women compared with non-Māori women (36.16 cm versus 34.34 cm, $p < 0.0001$). Neck size, as an indicator of central obesity, is a risk factor that has been shown to correlate more closely to OSAS than Body Mass Index (Bassiri and Guilleminault 2000).

Table 13.2: New Zealand population prevalences of OSAS symptoms for 30–59 year olds by ethnicity and sex, 1999

Variable		Māori % (95% CI)	Non-Māori % (95% CI)	Relative risk (95% CI)
Snore always (%)	Men	16.2 (14.2–18.3)	10.1 (8.7–11.6)	1.60 (1.32–1.94)
	Women	6.9 (5.7–8.1)	4.1 (3.2–4.9)	1.70 (1.29–2.26)
Observed apnoeas (%)	Men	30.3 (27.7–32.8)	18.3 (16.4–20.2)	1.65 (1.45–1.89)
	Women	11.5 (9.9–13.1)	6.2 (5.1–7.3)	1.85 (1.48–2.30)
Excessive daytime sleepiness (%)	Men	24.6 (22.2–27.0)	15.6 (13.8–17.3)	1.58 (1.36–1.83)
	Women	22.2 (20.0–24.3)	12.1 (10.6–13.5)	1.84 (1.57–2.15)

Source: National OSAS symptom and risk factor survey (Harris 2003)

In another study, a sample of adults in the Wellington region were monitored overnight in their own homes, using recording equipment to assess breathing disturbances during sleep (Mihaere et al 2003; Mihaere 2004). Breathing disturbances

¹ Polysomnography is a diagnostic test for sleep disorders. It involves monitoring a number of variables during sleep. These include brain activity and stage of sleep, breathing effort and airflow, blood oxygen levels, body movement, eye movement, muscle tone and heart activity.

² Defined as an Epworth Sleepiness Score > 10 (Johns 1991,1993; Johns and Hocking 1997).

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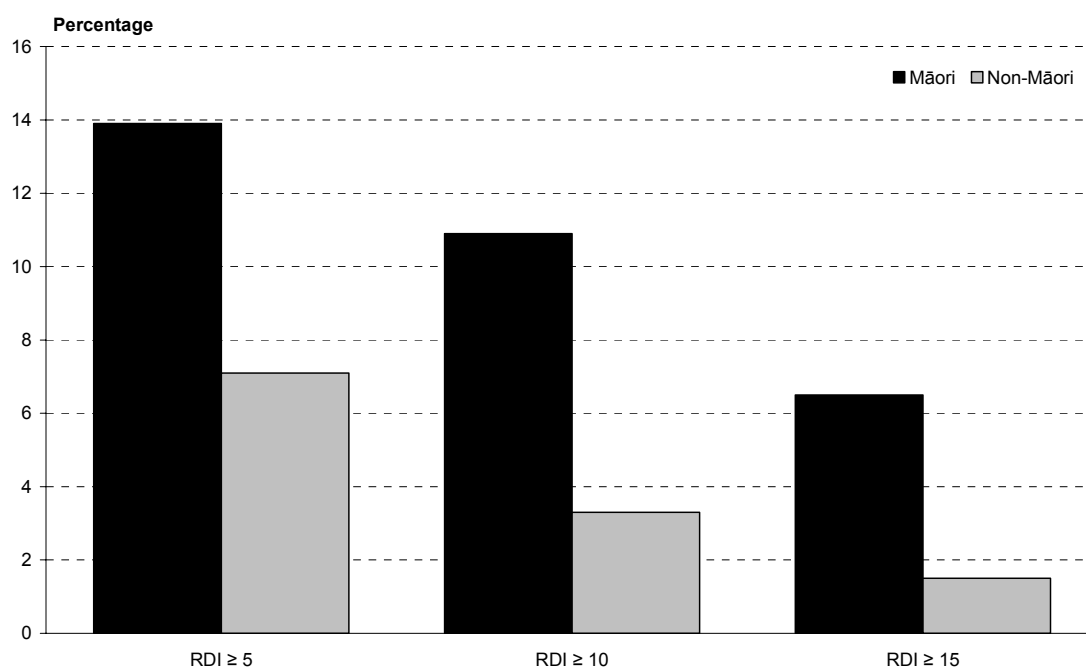
were defined here as different thresholds of the respiratory disturbance index (RDI) which measures the number of breathing disturbances³ during sleep per hour. The prevalence of all RDI thresholds were higher in Māori than non-Māori (Table 13.3, Figure 13.1). In particular, Māori were significantly more likely to have more severe respiratory disturbances. Māori were three times more likely to have more than 10 breathing disturbances per hour of sleep and four times more likely to have more than 15 breathing disturbances per hour of sleep than non-Māori (Table 13.3). In this study, the higher risk among Māori appeared to be due to well-recognised risk factors such as increased body mass index and large neck size.

Table 13.3: New Zealand population prevalences of RDI thresholds for 30–59 year olds by ethnicity, 2000

RDI	Māori	Non-Māori	Relative risk (95% CI)	p-value
	% (95% CI)	% (95% CI)		
RDI ≥ 5	13.9 (7.3–20.4)	7.1 (3.4–10.9)	1.94 (0.96–3.92)	0.079
RDI ≥ 10	10.9 (5.1–16.6)	3.3 (0.7–6.0)	3.25 (1.25–8.43)	0.02
RDI ≥ 15	6.5 (2.3–10.8)	1.5 (0.0–3.1)	4.36 (1.28–14.91)	0.03

Source: OSA community study (Mihaere et al 2003; Mihaere 2004)

Figure 13.1: New Zealand population prevalences of RDI thresholds for 30–59 year olds by ethnicity, 2000



Source: OSA community study (Mihaere et al 2003; Mihaere 2004)

Sleep problems in New Zealand are a significant public health issue because of their high prevalence and inequitable distribution, and their potentially serious consequences for health, safety, and quality of life. Disparities between Māori and non-Māori in the prevalence of sleep problems and common sleep disorders have

³ Involving at least a 4% drop in oxygen desaturation.

implications for the development of sleep health services, with the need for these services being greater among Māori. Disparities in sleep problems may also impact on other health inequalities between Māori and non-Māori such as motor vehicle accidents, work place injuries, cardiovascular disease, and general health and quality of life.

Health service implications

Health services can play an important role in addressing ethnic inequalities in health across the continuum of care from prevention through to diagnosis and management.

There are currently very few specialist diagnostic and treatment services for sleep problems in New Zealand. These are hospital-based and focus primarily on sleep-related breathing disorders such as OSAS. More recently there has also been the development of some sleep services in primary care (Sparks et al 2002). In general however, there is a high level of unmet need for sleep services with demand greatly exceeding available resources (Gander 2003, Neill et al 2000).

Accessibility of specialist services to Māori is of concern. Disproportionate numbers of Māori patients seen in clinics with more severe OSAS raises questions about why Māori are not gaining access at the same level of severity. In addition, a number of clinics are private services, which may result in financial barriers.

Current services are unable to meet the needs of the population, which are expected to worsen, as increases in risk factors such as obesity (Ministry of Health 2004) lead to increases in sleep disorders such as OSAS. Disparities in the distribution of disease are important to consider in the planning and development of sleep services. In particular, the development of services designed to meet Māori needs are required in order to address inequalities and population needs.

In addition to a lack of services, other health sector issues include the under-recognition of sleep disorders by health professionals (Young et al 1997) and the need for further education on sleep and its impact on health (Gander 2003). This should include information on ethnic inequalities in New Zealand and the greater risk among Māori.

Finally, the prevention of sleep problems and their consequences also has public health implications. These include the need for measures to reduce health-related risk factors such as obesity, smoking, and inequalities in wider determinants of health, as well as the need to mitigate societal impacts on sleep such as shiftwork. This has implications not only for the health sector but also for other sectors and industry groups.

An integrated approach to the prevention and management of sleep problems in New Zealand is needed. The higher risk among Māori of the development of sleep problems and their negative consequences indicates Māori needs should be prioritised.

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