Welcome to the latest issue of Sleep Medicine Research Review.

The issue starts with an important NZ study from Massey’s Sleep Wake Centre. It found that sleep problems affect one-quarter of elderly Māori and nearly one-third of elderly non-Māori and need to be addressed as they have the potential to jeopardise successful healthy ageing. A large robust study gives information to guide our advice to parents about keeping bedtime consistent and appropriate for children, and a new NoSAS score is developed to identify sleep-disordered breathing. We report an excellent and easy-to-read review detailing current evidence for insomnia management, and finish with an interesting meta-analysis of light therapy for sleep problems.

We hope you find these and the other selected studies interesting, and welcome your feedback.

Kind regards,

Associate Professor Alister Neill  
gilstenNeill@researchreview.co.nz

Dr Karen Falloon  
karenFalloon@researchreview.co.nz

---

Sleep of Māori and non-Māori of advanced age

Authors: Gibson R et al.

Summary: This study estimated the prevalence, predictors and outcomes of sleep problems in Māori and non-Māori of advanced age. 251 Māori and 398 non-Māori adults aged 79–90 years who were participating in the LiLACS NZ cohort study were included. Multiple logistic regression analysis was used to identify predictors of reporting a current sleep problem, and investigate the relationships between sleep problems and physical and mental health. 26.3% of Māori and 31.7% of non-Māori reported a current sleep problem. Those who reported a past sleep problem were more likely to also report a current sleep problem (adjusted odds ratio, 2.67), and Māori were less likely than non-Māori to report a current sleep problem (adjusted odds ratio, 0.52). Sleep problems were associated with poorer physical and mental health, and falls.

Comment (AN): This important New Zealand study by researchers from Massey’s Sleep Wake Centre found that sleep problems are very common – affecting one-quarter of elderly Māori and nearly one-third of other New Zealanders. They aim to raise public and clinical awareness about sleep problems as effective treatment would reduce the likelihood of physical (including falling) and mental health problems.


Abstract

---

Sleep Medicine Review

www.researchreview.co.nz
Sleep timing and child and parent outcomes in Australian 4–9-year-olds

Authors: Quach J et al.

Summary: This study used national Australian time-diary data to examine the impact of sleep timing on child behaviour, quality of life (QOL), learning, cognition and weight status, and parental mental health. Data were available from the first 3 waves of the Longitudinal Study of Australian Children for 3631 children aged 4–5 years who were recruited in 2004. Parents completed 24-h child time-use diaries for 1 week and one weekend day in each wave. Sleep timing was categorised as early-to-sleep/early-to-wake, early-to-sleep/late-to-wake, late-to-sleep/early-to-wake, and late-to-sleep/late-to-wake. Using early-to-sleep/early-to-wake as the reference, linear regression analyses revealed that being late-to-sleep was associated with poorer child QOL from 6–9 years and poorer maternal mental health at child age 6–7 years. There was inconsistent evidence for associations between sleep timing and all other outcomes. Longitudinal analyses showed a cumulative effect of being late-to-sleep on poorer child and maternal outcomes at child age 8–9 years.

Comment (KF): This large robust study gives information to guide our advice to parents about keeping bedtime consistent and appropriate for children. Early to bed and early to rise on all nights of the week appears to be the most beneficial for children. Early to bed is defined in this study as sleep by 8.30pm for 4–5 year olds, by 8.45pm for 6–7 year olds, and by 9pm for 8–9 year olds, and early to rise is awake by 7.15am. Sleep timing is related to a child’s intrinsic sleep needs and circadian timing but is also strongly influenced by social and environmental factors which are modifiable. Aiming for consistent earlier bed and wake times in children would be sensible advice for all parents especially in the preschool years and where mothers are at risk of depression. The Sleep Health Foundation website has useful fact sheets for health professionals and parents.

Abstract

The NoSAS score for screening of sleep-disordered breathing

Authors: Marti-Soler H et al.

Summary: This derivation and validation study developed a screening tool to identify individuals at risk for sleep-disordered breathing. 2121 participants from the population-based HypnoLaus cohort in Lausanne, Switzerland, who had a clinical assessment and polysomnography were used to build a clinical score (the NoSAS score) for clinically significant sleep-disordered breathing, based on a neck circumference ≥40cm (4 points), a body mass index of 25 to <30 kg/m² (3 points), a body mass index ≥30 kg/m² (5 points), snoring (2 points), age >55 years (4 points), and male sex (2 points). A NoSAS score of 8 points or more indicated a risk of clinically significant sleep-disordered breathing, with an area under the curve (AUC) of 0.74. The NoSAS score showed an even stronger discriminative power than the Stop-Bang and Berlin score, a screening tool to identify sleep-disordered breathing. The NoSAS score has higher discriminative power than the Stop-Bang and Berlin questionnaires with reasonable discriminative power (AUC 0.74–0.81). It is not clear if it biases against women being diagnosed.

Comment (AN): This large Swiss epidemiological study of the NoSAS score, a screening tool to identify sleep-disordered breathing, shows even stronger performance in the validation EPISODE cohort (AUC 0.81). The NoSAS score was found to perform better than existing screening tools (STOP-Bang and Berlin).

Reference: Lancet Respir Med 2016; published online Jun 16
Abstract

Sleep apnea and obstructive airway disease in older men

Authors: Zhao Y et al.

Summary: This study used data from the Outcomes of Sleep Disorders in Older Men study to evaluate the association between OAD and sleep apnoea in older men. 853 community-dwelling men (mean age 80.7 years) across 6 centres in the US were included. Sleep was measured using in-home polysomnography and lung function was measured by spirometry. 13% of men had OAD and 29% had sleep apnoea. In univariate analysis, men with OAD had a significantly lower apnoea-hypopnoea index and a lower prevalence of sleep apnoea than men without OAD. After adjustment for potential confounders, OAD remained independently associated with a lower likelihood of sleep apnoea (odds ratio, 0.30; p=0.0001) Individuals with both OAD and sleep apnoea (n=16) had an increased arousal index and lower oxygen saturation level than those with OAD alone.

Comment (AN): This interesting study concludes that COPD has a protective effect, reducing the likelihood of obstructive sleep apnoea independently of markers of adiposity. Mechanisms driving this include the effect of hyper-inflated lungs stiffening the upper airway (by caudal traction), and changes in CO₂ responsiveness.

Reference: Sleep 2016;39(7):1343-51
Abstract

Comparing and contrasting therapeutic effects of cognitive-behavior therapy for older adults suffering from insomnia with short and long objective sleep duration

Authors: Lovato N et al.

Summary: This study evaluated the efficacy of a brief group-based programme of CBTi in older adults with chronic insomnia. 91 adults with sleep maintenance insomnia were classified as short sleepers (<6h total sleep time) or long sleepers (>6h total sleep time) based on 1 night of home polysomnography. They were then randomised to a 4-week, group-based treatment programme of CBTi or to a wait-list control group. Sleep diaries, actigraphy, and a battery of questionnaires were used to distinguish those with objectively short sleep (poorer prognosis) from those with longer sleep (sleep wave misperception and more amenable to CBTi). It showed that both groups received comparable treatment benefit. This doesn’t provide support for polysomnography as part of the routine assessment of insomnia phenotypes.

Reference: Sleep Med 2016;22:4-12
Abstract
Melatonin supplementation for children with atopic dermatitis and sleep disturbance

Authors: Chang Y et al.

Summary: This study evaluated the effectiveness of melatonin supplementation for improving the sleep disturbance and severity of disease in children with AD. 48 children and adolescents aged 1–18 years with AD were randomised to receive melatonin 3 mg/day or placebo for 4 weeks each in a double-blind, crossover design. The primary outcome of AD severity was evaluated using the Scoring Atopic Dermatitis (SCORAD) index, where a lower score indicates less severity. The mean SCORAD index was 49.1 after 4 weeks of placebo and 40.2 after 4 weeks of melatonin (p<0.001), and the sleep-onset latency shortened by 21.4 minutes after melatonin treatment compared with placebo (p=0.02).

Comment (AN): Somewhat out of left field this well powered, placebo-controlled trial supports the use of melatonin in children with AD, with improved sleep and dermatitis symptoms scores.


Abstract

Effect of clonazepam and clonidine on primary sleep bruxism

Authors: Salai T et al.

Summary: This study investigated the acute effects of clonazepam and clonidine in young adults with primary sleep bruxism. Polysomnography was performed on 19 individuals (mean age 25.4 years) for 5 nights. The first 2 nights were used for the habituation and diagnosis of sleep bruxism. The next 3 nights were randomly assigned for clonazepam (1mg), clonidine (0.15mg) or placebo in a double-blind, crossover design. All agents were given 30 min before bedtime. Clonidine significantly reduced the median percentage of time spent in the REM sleep stage compared with placebo and clonazepam. Clonidine also decreased the number of rhythmic masticatory muscle activity episodes by >30% compared with placebo and clonazepam.

Comment (AN): There are not many well-designed clinical trials comparing treatments for sleep bruxism. Clonidine is an alpha-2 receptor blocker – an old drug used to treat refractory hypertension, attention deficit hyperactivity disorder and Tourette syndrome. It’s not clear if these results translate to being a clinically significant improvement.

Reference: J Sleep Res 2016; published online Aug 3

Abstract

For more information, please go to www.medsafe.govt.nz
Silent cerebral small vessel disease in restless legs syndrome

Authors: Ferri R et al.

Summary: This study evaluated the presence of silent cerebral small vessel disease (SVD) in patients with RLS. 53 patients with RLS for <10 years, 44 patients with RLS for >10 years and 74 healthy controls were included. All participants underwent magnetic resonance imaging, and scans were analysed for area and volume of SVD. The area of SVD was significantly greater in the entire group of RLS patients compared to controls (p=0.036); driven almost entirely by the group with RLS for >10y. SVD area and volume were significantly increased in patients with RLS >10y compared with controls and patients with RLS <10y. Age and duration of RLS were independent predictors of SVD.

Comment (KF): Given the apparent association between RLS and cerebral SVD (and thus risk of clinical stroke) it would be prudent to optimise management of other risk factors for stroke (e.g. hypertension, diabetes, hypercholesterolaemia, smoking, sleep apnoea) in patients with RLS.

Reference: Sleep 2016;39(7):1371-77

Abstract

Slow dissolving of emotional distress contributes to hyperarousal

Authors: Wassinga R et al.

Summary: This study investigated the hypothesis that restless REM sleep interferes with the overnight resolution of emotional distress, thus contributing to accumulation of arousal. 1199 participants completed questionnaires on insomnia severity, hyperarousal, self-conscious emotional distress, and thought-like nocturnal mentation (a proxy for restless REM sleep). The experience of distress lasting overnight increased with insomnia severity, whereas short-lasting distress did not. Insomnia severity was associated with hyperarousal and with the thought-like nocturnal mentation specifically associated with restless REM sleep. Structural equation modelling showed that 62.4% of the association between these key characteristics of insomnia was mediated by reduced overnight resolution of emotional distress.

Comment (KF): Although chronic insomnia has many flavours, hyperarousal is a common feature for many. This study provides some supporting evidence for mechanisms underlying hyperarousal. I imagine they are not the only mechanisms but are particularly resonant when dealing with those who also have high levels of distress or depression. The authors found thought-like (rather than dream-like) mentation to reflect fragmentation of REM sleep (restless REM sleep). This night-time thinking significantly correlated with distress lasting overnight (consolidated REM sleep leads to overnight resolution of distress). The more frequently this long-lasting distress occurred, the more the distress accumulates leading to chronic hyperarousal … which would then lead to continued difficulty sleeping and the vicious cycle that is chronic insomnia. So the “busy brain” and overnight thinking we see in those with insomnia and what we do about it – focussing treatment on ‘dearousal’ strategies and sleep scheduling in order to consolidate fragmented sleep – now has further scientific validation.

Reference: Proc Natl Acad Sci USA 2016;113(9):2538-43

Abstract

Independent commentary by Dr Karen Falloon

Dr Karen Falloon completed her medical training at the University of Auckland Medical School in 2001. She became a fellow of the Royal New Zealand College of General Practitioners in 2009. In 2014 Karen completed her PhD in General Practice for which she investigated the effectiveness of a behavioural treatment for insomnia. She is now working part time as a general practitioner and part time as a senior lecturer in the Department of General Practice and Primary Health Care at the University of Auckland. Karen is a member of the Australasian Sleep Association and serves on the GP education subcommittee.

Advances in the management of chronic insomnia

Authors: Kay-Stacey M & Altattar H

Summary: This review discussed recent advances in both non-pharmacological and pharmacological treatments for patients with chronic insomnia. The controversies surrounding some of the current drug treatments were discussed, as was the role that technology and personal activity monitoring devices may also play in treating insomnia.

Comment (KF): This is an excellent and easy-to-read review detailing the current evidence for various aspects of insomnia management (useful when trying to motivate patients to try/persist with non-drug methods). CBTi remains the first line recommended treatment. However, there is good evidence that methods such as sleep restriction, exercise, meditative movement and mindfulness-based stress reduction are promising options. There remains no ideal pharmacological option for insomnia management. Superoxant, doxepin and immediate release zolpidem are discussed but are not available in New Zealand in the formulations or dosages studied. The controversy around the harms of sedative hypnotics was also discussed. Essentially, adverse effects from taking sedative hypnotics were deemed to be not as alarming as first reported (e.g. mortality risk), but these drugs are clearly not as benign as previously thought. Caution should be exercised in their use particularly for those aged over 65 years.

Reference: BMJ 2016;354:i2123

Abstract

The effects of light therapy on sleep problems

Authors: Van Maanen A et al.

Summary: This systematic review and meta-analysis investigated the effect of light therapy on sleep problems. 53 studies involving 1154 participants were included. Light therapy was found to be effective in the treatment of sleep problems in general, and for circadian rhythm sleep disorders, insomnia, and sleep problems related to Alzheimer disease/dementia specifically. For circadian rhythm sleep disorders, effects were smaller in randomised controlled trials. For insomnia, greater effects were reported in studies using a higher light intensity. For sleep problems related to Alzheimer disease/dementia, greater effects were reported in studies with more female participants. Most effect sizes were small to medium.

Comment (KF): Light is a remarkable thing. In relation to sleep, it has important functions with circadian rhythm, inhibiting melatonin secretion and alerting effects. We can harness the therapeutic benefits of this. Time in natural light during the day (especially early morning) is an important component of restoring sleep patterns. This meta-analysis shows bright light therapy using a light box may be effective for sleep problems especially for insomnia, circadian rhythm sleep disorders and sleep problems in Alzheimer disease/dementia. Evidence for the effect did come from smallish numbers in randomised controlled trials so further research would be useful, especially relating to dose, intensity and duration of treatment. It could potentially be considered an add-on treatment for selected patients who have not fully responded to more standard treatments, especially for those with insomnia and fatigue. I will continue to recommend that people get into the natural light first thing in the morning to harness the benefits of sunlight. It would be interesting to know if this has comparable effect sizes to those seen in the light box studies.


Abstract