



# Sleep Well Be Well

Digital education program on behavioural child sleep problems

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## The opportunity

Sleep Well Be Well is a digital education program for health and education professionals to upskill them in managing sleep problems in children aged 0.5 -13 years (**SWBW**).

Sleep is a vital element of the daily routine and has been described as the "golden chain that ties health and our bodies together". Child behavioural sleep problems (i.e. problems getting to sleep or waking up frequently at night) are common, affecting up to 30% of typically developing children and 70% of children with neurodevelopmental disorders such as ADHD and autism spectrum disorders. Child behavioural sleep problems adversely impact on a child's mental health, quality of life and learning and are associated with poorer parent sleep and mental health. Behavioural sleep problems are different and more prevalent compared to physical sleep problems (i.e. sleep apnoea, snoring - about 10-20% of children suffer from physical sleep problems).

Despite the prevalence of behavioural sleep problems in children both in Australia and globally, the nature of sleep and the disorders that affect it are not well understood by health professionals and parents alike. As a result, health professionals frequently do not manage sleep problems and instead refer families on to specialist sleep services such as the Sleep Disorders Clinic at The Royal Children's Hospital (**RCH**). However, waiting lists for this clinic are now in the order of 8-12 months, with similar wait times at other clinics across Australia. Many of the children referred to the clinic could have been managed earlier, by trained health professionals working in the front line, closer to the child's home.

A recently completed randomised control trial (**RCT**) by the **SWBW** team at Murdoch Children's Research Institute (**MCRI**) of 334 children with sleep problems from approximately 40 Australian schools where **MCRI** sleep strategies were delivered by trained school nurses, has shown that behavioural sleep problems are highly amenable to treatment with positive flow on effects for child social-emotional functioning, learning and parent mental health. A suite of health professional educational content, parent handouts and evidence-based sleep strategies to manage child behavioural sleep problems developed in the **RCT** have been utilised to develop **SWBW**. Importantly, the strategies are feasible to deliver in practice and acceptable to parents and professionals alike. "Bedtime Fading", a strategy for establishing a regular

bedtime to help set a child's internal body clock, is an example of just one of the strategies that has been proven to work. In a related **MCRI** **RCT** with children with ADHD (n=244 children) results showed a 25% absolute reduction in sleep problems with positive flow on effects including reduced ADHD symptom severity, improved classroom behaviour and improved child quality of life for children who received the strategies compared with those who did not.

The **MCRI** **SWBW** team is a multi-disciplinary team comprising a paediatrician, clinical psychologist and education researcher, with leading international child sleep management expertise. The **SWBW** team have conducted the most **RCT**'s in child behavioural sleep problems across the world and released a successful online infant sleep program in 2013 for health professionals. The project lead, Harriet Hiscock, is an eminent sleep expert recognised by Johnson & Johnson (2016 Pediatric Sleep Council), Australia's peak sleep education body – the Sleep Health Foundation (paediatric member, GP Education Subcommittee) and the Raising Children Network (her infant sleep program provides the content for the infant sleep settling strategies).

We are working with the relevant professional associations and bodies to ensure **SWBW** is compliant with professional development requirements of our user group.

## The technology

The **SWBW** intervention program has been designed and the software is currently being built. We expect to have a product market ready by Dec 2017. **SWBW** will include animations, videos, case studies and parent education materials in addition to the intervention programs. **SWBW** will be built as a mobile/tablet application as this will allow us to utilise the App Store for distribution and payment functionality and will also allow us to send push notifications to users.

**SWBW** is being built in collaboration with Curve Tomorrow, an innovation and technology company that has been working with the **MCRI** for 5 years. Curve Tomorrow has extensive experience in product development and commercialisation with an emphasis on user oriented design thinking. Curve Tomorrow has also successfully worked with **MCRI** on turning research and ideas into immersive commercial products.

## Applications and market

The sleep market is large and rapidly growing. Child behavioural sleep problems affect up to 30% of typically developing children (1.2 million children in Australia alone) and 70% of children with neurodevelopmental conditions. Adult sleep problems are also common with nearly 19% of the US population affected by chronic sleep disorders and sleep problems. A 2017 report commissioned by the Sleep Health Foundation put the financial economic cost of sleep deprivation at \$26.2 billion with a further \$40.1 lost in wellbeing and productivity. Similarly a 2016 RAND Europe report suggested the economic cost across 5 other OECD countries was \$411 billion (US), \$60 billion (DE), \$138 billion (JP) \$50 billion (UK) and \$21.4 billion (CA). Digital innovation in the area of sleep has exploded over the past five years with a multitude of direct to consumer apps (including Apple's HealthKit), wearables (including Fitbit), on bed and night stand devices tracking and reporting on sleep to varying degrees of accuracy.

There is a clear lack of sleep specific education resources for health and education professionals in Australia and globally. This is supported by a recent study conducted by HealthXL which analysed the

direct to consumer sleep market and following a workshop among leading US healthcare providers and patient organisations found that the primary challenge facing improved sleep problem detection and treatment was better dissemination of sleep education to both health professionals and the public.

**SWBW** has been designed for parents of children with behavioural sleep problems to self-manage behavioural sleep in the home. **SWBW** will be offered to parents in all English speaking countries, not just Australia and could be easily translated into other languages. Distribution for iOS and Android versions will be via the Apple App and Google Play stores.

The number of potential users of **SWBW** in Australia, US and UK alone is 4.71 million. Our preliminary research indicates we could charge parents at least \$25 (per person) for access to the **SWBW** program. This amount represents about half of the out of pocket expense of seeing a sleep professional. We expect sales in Australia to exceed \$1 million after the first year and over \$5 million per annum by Year 6.

The need for **SWBW** is further supported by the almost weekly requests this MCRI group receives from external researchers and clinicians all over the world for its sleep content and strategies.

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