

[Is ADHD really a sleep problem?](#)

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Around 75% of children and adults with Attention Deficit Hyperactivity Disorder (ADHD) also have sleep problems, but until now these have been thought to be separate issues. Now a in a pulling together of the latest research, Scientists are proposing of a new theory which says that much of ADHD may in fact be a problem associated with lack of regular circadian sleep.

Presenting the proposal at the ECNP Conference in Paris, Professor Sandra Kooij (Associate Professor of Psychiatry at VU University Medical Centre, Amsterdam and founder and chair of the European Network Adult ADHD) said:

"There is extensive research showing that people with ADHD also tend to exhibit sleep problems. What we are doing here is taking this association to the next logical step: pulling all the work together leads us to say that, based on existing evidence, it looks very much like ADHD and circadian problems are intertwined in the majority of patients.

We believe this because the day and night rhythm is disturbed, the timing of several physical processes is disturbed, not only of sleep, but also of temperature, movement patterns, timing of meals, and so on.

If you review the evidence, it looks more and more like ADHD and sleeplessness are 2 sides of the same physiological and mental coin".

Professor Kooij laid out the links which have led to the synthesis:

- In 75% of ADHD patients, the physiological sleep phase — where people show the physiological signs associated with sleep, such as changes in the level of the sleep hormone melatonin, and changes in sleep-related movement - is delayed by 1.5 hours.
- Core body temperature changes associated with sleep are also delayed (reflecting melatonin changes)
- Many sleep-related disorders are associated with ADHD, including restless-leg syndrome, sleep apnea, and the circadian rhythm disturbance, the delayed sleep phase syndrome
- ADHD people often show greater alertness in the evening, which is the opposite of what is found in the general population
- Many sufferers benefit from taking melatonin in the evening or bright light therapy in the morning, which can help reset the circadian rhythm
- Recent work has shown that around 70% of adult ADHD sufferers show an oversensitivity of the eyes to light, leading many to wear sunglasses for long periods during the day – which may reinforce the problems associated with a 'circadian shift'.

- Chronic late sleep leads to a chronic sleep debt, associated with obesity, diabetes, cardiovascular disease and cancer. This cascade of negative health consequences may in part be preventable by resetting the sleep rhythm.

Professor Kooij continued

“We are working to confirm this physical-mental relationship by finding biomarkers, such as Vitamin D levels, blood glucose, cortisol levels, 24 hour blood pressure, heart rate variability, and so on. If the connection is confirmed, it raises the intriguing question: does ADHD cause sleeplessness, or does sleeplessness cause ADHD? If the latter, then we may be able to treat some ADHD by non-pharmacological methods, such as changing light or sleep patterns, and prevent the negative impact of chronic sleep loss on health.”

“We don’t say that all ADHD problems are associated with these circadian patterns, but it looks increasingly likely that this is an important element.”

Commenting, Professor Andreas Reif (University Hospital, Frankfurt, and leader of the EU CoCA project on ADHD), who was not involved in the research, said *“A disturbance of the circadian system may indeed be a core mechanism in ADHD, which could also link ADHD to other mental illnesses such as depression or bipolar disorder. But also beyond these pathophysiological considerations, sleep problems and abnormalities of circadian rhythms are a huge problem for many patients, heavily impacting on their social life”* He continued *“More research into the interconnections between ADHD and the “inner clock” is thus very relevant to improve patients’ lives and to shed light on the disease mechanism of ADHD.”*

Note: Attention deficit hyperactivity disorder (ADHD) is a group of behavioural symptoms with a neurobiological background, that include inattentiveness, hyperactivity, mood swings and impulsiveness. ADHD is highly heritable, and several differences in brain volume and function have been shown compared to controls. Symptoms of ADHD tend to be noticed at an early age and may become more noticeable when a child's circumstances change, such as when they start school. Most cases are diagnosed when children are 6 to 12 years old, but ADHD is also increasingly recognised in adults and older people, as ADHD can persist during the lifespan. People with ADHD often have additional problems, such as sleep, mood- and anxiety disorders. Between 2 and 5 % of children, adults and older people suffer from ADHD

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Notes for Editors

The European College of Neuropsychopharmacology (ECNP)

The ECNP is an independent scientific association dedicated to the science and treatment of disorders of the brain. It is the largest non-institutional supporter of applied and translational neuroscience research and education in Europe. Website: www.ecnp.eu

The 30th annual ECNP Congress takes place from 2nd to 5th September in Paris. It is Europe’s premier scientific meeting for disease-oriented brain research, annually attracting between 4,000 and 6,000

neuroscientists, psychiatrists, neurologists and psychologists from around the world. Congress website: <http://2017.ecnp.eu/>

Conference abstract : Circadian rhythm and sleep in ADHD – cause or life style factor?

S. Kooij PsyQ, Department Adult ADHD, The Hague, The Netherlands

ADHD in children and adults is very often accompanied by sleep problems, that generally lead to sleepiness during the day and impaired attentiveness. The resulting sleep debt in the long term is associated with general health problems like obesity, diabetes, cardiovascular disease and cancer [1]. During this presentation, an overview of the literature on sleep in ADHD will be discussed, as well as recent research on circadian rhythm disturbances in ADHD and its possible consequences for health in general. Sleep disorders most found in ADHD are restless leggs syndrome, sleep apnea, and the circadian rhythm sleep disorder: delayed sleep phase syndrome. In 75% of ADHD patients the sleep phase is delayed, as has been shown using melatonin measurements in saliva in children and adults, and by actigraphy measurements of movement patterns [2]. Also body core temperature, that reflects melatonin levels at night, is delayed and slightly decreased [3]. A late sleep pattern is often genetically driven, starts in childhood, and may have several consequences for health in general in the long term, which outcome is increasingly studied in ADHD patients. As ADHD and circadian rhythm sleep disorders are intertwined in the majority of cases, the question arises whether disturbed sleep may drive ADHD symptoms, or whether ADHD induces sleep problems. Also the question whether late sleep is just a matter of lifestyle will be discussed [4]. Available evidence for treatment of late sleep with sleep hygiene, melatonin at night and bright light therapy in the morning will be discussed [1].

References

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How this was reviewed?

After initial approval from the ECNP media group, the press release was developed by the press officer and the author, with the final version being approved by the ECNP media review group. We then sought an additional view and comment from someone with expertise in the field – this is the person who comments in the press release. None of the reviewers have been involved in the work.

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