Symposium: Targeting Sleep and Circadian Rhythms in Rehabilitation

Organized by: Ali Amidi

Chair: Ali Amidi

The aim of this symposium is to present theoretical and empirical evidence for sleep and circadian rhythm interventions as a target in rehabilitation. Amidi will present a framework for behavioural interventions. Wu will present findings on the association between light exposure and sleep, fatigue and cognition; Zachariae will discuss cognitive-behavioural therapy for insomnia; and Jespersen will present evidence for the use of music therapy for insomnia symptoms.

Presentation 1

Title: The Two-Process Model of Sleep Regulation as a Conceptual Framework for Rehabilitation

Presented by: Ali Amidi, Ph.D., Assistant Professor, Department of Psychology and Behavioural Sciences, Aarhus University

Abstract: Many clinical populations including patients with mild traumatic brain injuries suffer from a range of co-occurring and persistent symptoms such as insomnia, fatigue, and cognitive impairment with significant negative impact on daily activities and quality of life. The Two-Process Model offers a framework that recognises the interaction between a homeostatic and a circadian process as crucial factors in the regulation of healthy sleep and wake behaviours with implications for cognition, emotion, and conation. The neurobiological mechanisms underlying these two processes are behaviourally modifiable and should thus be considered key candidates of intervention targets in holistic neurorehabilitation. Easily implementable non-pharmacological interventions such as systematic light exposure, cognitive behavioural therapy for insomnia, and music therapy, are examples of such interventions with the potential to alleviate a range of debilitating symptoms observed in many clinical populations.

Presentation 2

Title: Light Exposure and Associations with Sleep, Fatigue, and Other Symptoms

Presented by: Lisa M. Wu, Ph.D., Associate Professor, Aarhus Institute of Advanced Studies, Aarhus University

Abstract: Patients undergoing neurorehabilitation may experience a range of co-occurring symptoms including fatigue, sleep disturbances, depressive symptoms, and cognitive impairment. These problems can overlap with the kinds of symptoms that may be present in other patient populations, such as cancer patients. Emerging evidence suggests that disruption of circadian rhythms (CRs) may underlie such symptoms. Wu will present findings from recent studies that have examined associations between light exposure and sleep disturbances, fatigue, depressed mood and cognitive impairment in different cancer groups and in brain injured populations. Light therapy, no matter the delivery method, is a low burden intervention that is easy to deliver and inexpensive. Hence, if effective as a therapeutic tool to treat symptoms beyond its initial use in seasonal affective disorder, light therapy has the potential for application to other patient populations who experience similar symptoms.

Presentation 3

Title: Cognitive-Behavioural Therapy for Insomnia: How Good is the Evidence?

Presented by: Robert (Bobby) Zachariae, Dr. Med. Sci., Professor, Unit for Psychooncology and Health Psychology (EPoS), Dept. of Oncology, Aarhus University Hospital and Dept. of Psychology and Behavioural Sciences, Aarhus University

Abstract: Cognitive-behavioural therapy for insomnia (CBT-I) is the general term for various combinations of non-pharmacological interventions for insomnia, including sleep restriction therapy, stimuli-control therapy, cognitive therapy, relaxation, and sleep hygiene education. While the efficacy of the individual components as stand-alone therapies varies, the available evidence has provided strong support for CBT-I, not only in comparison with passive controls but also in head-to-head comparisons with pharmacotherapy. This has led to recommending CBT-I as first-choice for treating insomnia, but the challenge remains to make it available and accessible to populations needs. Digital formats of CBT-I (eCBT-I) may be one approach to solving this challenge, and a small, but growing number of studies has shown eCBT-I to be highly efficacious in treating insomnia, not only as the primary complaint, but also comorbid insomnia, e.g., in women treated for breast cancer.

Presentation 4

Title: Music as a Tool to Alleviate Insomnia Symptoms

Presented by: Kira Vibe Jespersen, Ph,D., Center for Music in the Brain, Aarhus University

Abstract: Many people listen to music at bedtime as a tool to improve sleep, and music has been suggested as a potential intervention to alleviate insomnia symptoms. Music may alleviate insomnia through psychological and neurophysiological mechanisms including distraction, arousal reduction and emotion regulation. In a Cochrane review we found a positive effect of music on sleep quality in various groups of people with poor sleep quality. However, the quality of the evidence was limited, and no studies included objective measures of sleep. To address these shortcomings, we conducted a randomized controlled trial evaluating the effect of bedtime music listening for improving sleep in adults with insomnia disorder. The results showed a positive effect of the music intervention on insomnia severity and quality of life, but no changes in objective sleep measures. The findings suggest that music may be most efficient as an early intervention for sleep-onset insomnia.