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Poster Session–Mental Health–Day 2 (Poster)

### The efficacy of Cognitive Behavioral Therapy for Insomnia (CBT-I) adapted to healthcare workers

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**Introduction:** Although insomnia is prevalent in healthcare workers (HCW), there is a lack of research examining the efficacy of CBT-I in this population. The current study examined the effects of HALEO's CBT-I program adapted to WHCs, comprised of five weekly 30-minute video-conference-enabled sessions with a licensed therapist, supported by a digital platform.

**Methods:** One hundred and twenty (120) adult HCWs (mean age = 43) from 4 Canadian hospitals, suffering from clinically significant insomnia as defined by a score of >14 on the Insomnia Severity Index (ISI), began the CBT-I program. One hundred and eight (108; 90%) completed the program and 105 filled out a post-therapy questionnaire. The efficacy of the CBT-I program was measured by the change in the ISI scores. The Hospital Anxiety and Depression Scale (HADS) was used to measure changes in anxiety (HADS-A) and depression (HADS-D) symptoms. Both questionnaires were filled out at the beginning of therapy (baseline) and just before the final therapy session (post-therapy). Data were analyzed with one-tailed Student paired *t*-tests.

**Results:** ISI scores were significantly lower post-therapy ( $M = 8.63$ ,  $SD = 4.76$ ) compared to baseline ( $M = 18.67$ ,  $SD = 2.77$ ;  $t(104) = 20.87$ )  $p < 0.001$ , Cohen's  $d = 2.04$ ). HADS-D scores were found to be significantly lower post-therapy ( $M = 5.28$ ,  $SD = 4.07$ ) compared to baseline ( $M = 7.68$ ,  $SD = 4.57$ ;  $t(102) = 6.83$ )  $p < 0.001$ ,  $d = 0.67$ ). HADS-A scores were also significantly lower post-therapy ( $M = 7.03$ ,  $SD = 3.47$ ) compared to baseline ( $M = 9.16$ ,  $SD = 3.96$ ;  $t(102) = 7.40$ )  $p < 0.001$ ,  $d = 0.73$ ).

**Conclusions:** Therapist-led CBT-I delivered through videoconference and supported by a digital platform is effective in reducing insomnia, depression, and anxiety symptoms in HCWs suffering from clinical-level insomnia.

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**Conflict of Interest:** Yes- The authors are employees of HALEO Health Preventative Solutions.

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### Sleep characteristics in eating disorder patients

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**Introduction:** Sleep and food intake are physiological processes of which common denominator represents the circadian rhythm. Its role besides other function is the affection of orexin and peptin production, which in case of food absence activates the organism to search for food and limit sleep, thereby ensuring survival. Disruption of circadian rhythm and production of the given substances either caused by eating disorders (ED) or because of a sleep disorder can affect the symptomatology but also the compliance of both problems. A small number of recent studies investigating the relationship between sleep and food intake describe the specifics of sleep behaviour in ED patients. The aim of this study was to research sleep characteristics in ED diagnoses (anorexia nervosa, bulimia nervosa, binge eating disorder).

**Method:** The study involved 51 female patients diagnosed with ED in specialised treatment unit, who were administered an anamnestic questionnaire regarding sleep habits and medication, Insomnia Severity Index (ISI), an Epworth Sleepiness Scale (ESS) and a shortened sleep calendar to describe time in bed (TIB), total sleep time (TST), sleep latency (SL) and sleep efficiency (SE).

**Results:** Based on data analysis it was found that patients with anorexia nervosa are more early birds in their chronotype ( $p < 0.001$ ) and there is a trend of reduced TST ( $p = 0.7287$ ) and SE ( $p = 0.1478$ ) compared to other ED diagnoses. Furthermore, patients with bulimia nervosa complain most of excessive daytime sleepiness in ESS ( $p = 0.0281$ ). Last but not least, an important conclusion is the fact that patients medicated with hypnotics ( $p < 0.001$ ) declare lower SE compared to patients medicated with antidepressants, in whom medication does not determine SE.

**Conclusion:** The study demonstrates significant connection between eating and sleeping habits in ED patients that varies, depending on the type of the ED diagnosis. The results show that sleep problems can significantly affect eating pattern of ED patients and that the focus on sleep regime regulation may positively influence the compliance and the outcome of the underlying diagnosis.

**Conflict of Interest:** No.

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### Exploration of the interplay between mental fatigue and effort perception using resting-state functional connectivity

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**Introduction:** The negative impact of mental fatigue (MF) on cognitive performance has long been described but its underlying brain

mechanisms remain unclear. It is further postulated that perceived effort may interplay with MF to constitute a stop-signal when the effort-reward is too imbalanced. This study aims to explore the functional connectivity changes in brain regions associated with effort-based decision-making (EBDM) after induction of low or high MF.

**Method:** 17 healthy volunteers ( $31.42 \pm 5.76$  y.o.) underwent a 2-session fatigue-inducing protocol. MF was induced by manipulating the difficulty of a working memory task with two conditions: slow (control) and fast (MF) items presentation. Participants rated their subjective perception of fatigue and effort pre- and post-task. Following both conditions, participants underwent a 3T resting-state fMRI acquisition. Behavioural data were analysed by means of linear-mixed models which tested the impact of condition on performance and subjective measures. Seed-based connectivity (SBC) analyses were conducted using CONN22.a. Nine seed-regions associated with MF and EBDM were selected *a priori*. Group-level analyses were thresholded at  $p < 0.001$  voxel-level and  $p$ -FDR  $< 0.05$  cluster-size (CS). Linear-mixed effect models were fitted to investigate the impact of condition and time on task performance and subjective measures.

**Results:** Behavioural analyses revealed decline in accuracy with time-on-task in the fatigue condition only ( $p < 0.001$ ). We also found a significant condition  $\times$  time interaction for the perception of effort ( $p < 0.05$ ). We did not find statistical difference regarding the fatigue perception across time and condition. SBC analyses revealed lower functional connectivity in the fatigue compared to control condition for several seeds (all  $ps$ -FDR  $< 0.05$ ). Among significant results, we observed changes in connectivity: between medial prefrontal cortex (mPFC) and right anterior cingulate cortex; between left insula and frontal poles; left dorsolateral PFC and left middle temporal gyrus.

**Conclusion:** Connectivity is lower in the fatigue condition compared to control between key EBDM regions and prefrontal regions involved in the working memory tasks. Especially, the lower connectivity between mPFC and ACC, respectively thought to be associated with cost-benefit estimation and effort-mobilization, emphasizes the need to take into account the effort needed to perform a task when assessing MF effects.

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##### Poster Session–Mental Health–Day 2 (Poster)

##### Sensational dreams: The prevalence of sensory experiences in dreaming

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**Introduction:** Dreaming, a widely studied phenomenon in sleep research, often reflects elements of waking life experiences. While

sensory perception is prevalent in wakefulness, sensory dream experiences remain relatively unexplored. Free recall dream reports, during which the subject is instructed to freely describe their dream content, may be limited in providing an unbiased quantification of sensory dream experiences.

**Method:** In this study, we developed a dream diary that includes direct questions on sensory dream experiences. With this multiday dream diary approach, we investigated sensory experiences in dreams upon final morning awakening in a homebased setting ( $n = 1221$  diaries).

**Results:** Our findings revealed that vision was the most prevalent sensory dream experience, followed by audition and somatosensation. Olfaction and gustation were reported at low rates. Notably, multisensory dreams were more prevalent than unisensory dreams. Additionally, sensory dream experiences were studied in the context of emotionally positive and negative dreams. Hereby, the prevalence of sensory modalities was found to vary across positive and negative dream emotions. A positive relationship was found between sensory richness and emotional intensity of dreams, as well as dream clarity, for both positive and negative dreams.

**Conclusion:** These results highlight the variety in dream experiences and suggest potential links between sensory richness, emotional content, and dream recall clarity. Systematic registration of sensory dream experiences may provide valuable insights into sleep-related memory consolidation and other aspects of sleep-related information processing.

**Conflict of Interest:** No.

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##### Poster Session–Mental Health–Day 2 (Poster)

##### Investigating the efficacy of digital cognitive-behavioural therapy in comparison to a sham application via integrated diary and actigraphy: A randomised, controlled trial

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**Introduction:** Dissemination of digital cognitive behavioural therapy (CBT-I) is a promising approach for treating insomnia in the broad population. Current evidence supports the effectiveness of the digital format, but clinical findings are often limited by the choice of control group and lack of in-depth therapeutic measures. This study was designed to investigate the specific effects of digital CBT-I in comparison to a sham application.

**Method:** Participants meeting criteria for insomnia were randomly allocated (1:1) to eight weeks of digital CBT-I or eight weeks of digital sleep monitoring (sham application). The primary outcome, insomnia severity, was assessed at baseline, 8-, and 16- weeks post-randomisation. Secondary outcomes included the assessment of sleep