



Polysomnographical effects of on-line sleep restriction therapy for insomnia

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Conclusion

Five weeks of online sleep restriction therapy improves sleep continuity and suggests improved physiological, as well as subjective sleep quality, with positive effects being sustained at ten week follow up.

Introduction

Insomnia is a serious public health problem worldwide, and chronic insomnia has considerable personal and social costs associated with greater healthcare utilization, work absenteeism, and severe health condition. Cognitive Behavioral Therapy (CBT) has proved to be effective in treating insomnia and a powerful component is thought to be sleep restriction. The purpose of the present study was to investigate the effects of online sleep restriction therapy on polysomnography (PSG).

Methods

Nineteen patients (mean age 46,4 ± 14,4 years, 80% women) with Insomnia Disorder underwent four polysomnographic ambulatory nights during an entire period of ten weeks; before the beginning of the online sleep restriction treatment (pre-treatment), three weeks later (mid-treatment), five weeks later (post-treatment) and ten weeks later (ten week follow up). The Karolinska Sleep Diary (KSD) was completed on the morning after each PSG night, one day before and two days before the PSG night (scale 1-5). The Karolinska Sleepiness Scale (KSS, 1-9) was filled out at several times during the day before and after the PSG night.

Results

At the post-treatment, patients showed, higher Sleep Efficiency (Pre= 82,5±2,3%, Post=89,2±1,6% , p<0.05), shorter wake time after sleep onset (Pre=66,4±9,1min , Post=34,7±6,5min , p<0.01), fewer awakenings/h (Pre= 5,5±0,8 , Post=3,6±0,4 , p<0.05), and lower N2 (Pre= 53,3±2,0% , Post=49,9±2,0% , p<0.05). N3% (Pre= 13,5±1,6 , Post=14,9±1,6 , p0.05) and REM% (Pre= 21,1±1,4 , Post=23,8±1,3 , p<0.05) did not differ. Ratings of sleep quality also improved in post-treatment and patients reported lower sleepiness on the KSS (Pre= 6,4±0,4 , Post=5,4±0,3 , p<0.05), as well as increased depth of sleep (Pre= 2,53±0,3 , Post=3,27±0,2 , p=0.05) and less early awakening (Pre= 3,0±0,4 , Post=3,6±0,3 , p<0.01).

	Pre-Treatment	Post-Treatment	t
Sleep efficiency	82,5±2,3	89,2±1,6	2.87*
Awakenings	5,5±0,8	3,6±0,4	2.14*
Wake time after sleep onset (min)	66,4±9,1	34,7±6,5	3.45**
N2 (%)	53,3±2,0	49,9±2,0	2.15*
N3 (%)	13,5±1,6	14,9±1,6	.93
REM (%)	21,1±1,4	23,8±1,3	1.74
Sleepiness (KSS)	6,4±0,4	5,4±0,3	2.19*
Early awakening	3,0±0,4	3,6±0,3	2.8*
Perceived deep sleep	2,53±0,3	3,27±0,2	3.56**

Means±se and t-value for PSG-variables during pre-treatment and post-treatment condition. *p<0.05, **p<0.01, ***p<0.001

Furthermore, at ten week follow up, not only the previous results remained but also the patients reported increased ease of falling asleep (Pre= 3,3±0,4 , Post10w=4,1±0,3 , p<0.05), higher sleep quality (Pre= 2,5±0,3 , Post10w=3,4±0,2 , p<0.05), less disturbed sleep (Pre= 3,1±0,3 , Post10w=4,1±0,3 , p<0.01), and a higher level of sufficient sleep (Pre= 2,27±0,3 , Post10w=3,0±0,3 , p<0.05).

