

Efficacy of Online Cognitive Behavioral Therapy for Different Insomnia Symptoms

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INTRODUCTION

Cognitive Behavioral Therapy for insomnia (CBT-I) is an effective treatment for chronic insomnia. However, its implementation in clinical practice is restricted by a lack of clinical expertise.

To offer CBT-I to a broader patient population, Somnio implements a standardized treatment protocol for internet-based application. Somnio includes the following common CBT-I components: psycho-education, sleep restriction, stimulus control, cognitive therapy, and relaxation therapy. The computerized protocol provides a systematic and consistent approach to the therapy and increases the efficiency of the consultant. Yet, the treatment can be adjusted to the specific needs of the individual patient.

Treatment consists of 8 weekly consults. All communication takes place via internet. To monitor progress and personalize the treatment, we rely on

1. a sleep questionnaire and beliefs and attitude questionnaire completed before treatment
2. daily sleep diaries during the baseline and treatment period
3. patients' additional comments and requests

Insomnia patients report various symptoms, including sleep initiation, sleep maintenance, and combined (initiation and maintenance) problems. Here, we report the efficacy of online CBT-I for the different groups of insomnia symptoms.

METHODS

62 insomnia patients (20 M, 42 F) voluntarily enrolled and paid for the treatment. Patients reported the following insomnia symptoms:

initiating sleep	30.6%
maintaining sleep	27.5%
combination of symptoms	41.9%

To assess treatment efficacy, the following parameters were used based on daily sleep diaries: sleep efficiency, total sleep time, sleep latency, number of awakenings, WASO, subjective sleep quality and feeling in the morning as rated on a 5-point scale.

Following a baseline period of sleep diary recording, patients completed at least 7 of the 8 CBT-I consults via internet on a weekly basis.

A repeated measures multivariate test was carried out to evaluate overall change across sleep parameters during the baseline and treatment period.

To compare improvement in different sleep parameters for each symptom group, the non-parametric Wilcoxon signed rank test was used comparing sleep parameters during the baseline period and after 7 consults. As multiple tests were carried out, we applied the Bonferroni correction.

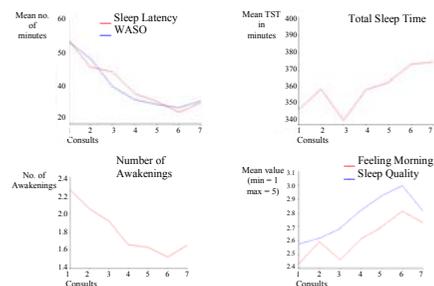
RESULTS

Overall treatment effect after 7 consults

Across all insomnia symptoms, sleep improved significantly over the consecutive 7 consults (multivariate repeated measures analysis, $p < 0.000$).

The therapy was effective, independent of the type of symptoms.

Sleep latency and Total sleep time did not contribute significantly to the overall improvement over the consults. Yet sleep was improved according to these parameters. The variability in type of complaints may have been the cause that these parameters failed to reach significance.



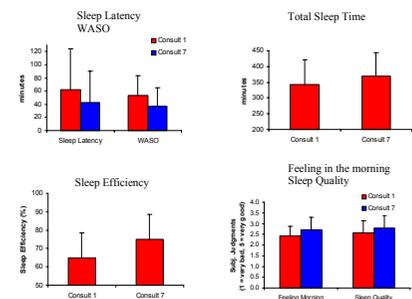
Comparison of baseline sleep pattern with sleep pattern after consult 7

Across all insomnia symptoms, all sleep parameters improved significantly between baseline and the 7th treatment session.

Sleep latency, WASO and Number of awakenings decreased significantly from the first to the seventh consult ($p < 0.000$).

Total Sleep Time and Sleep Efficiency increased significantly from the first to the seventh consult ($p < 0.000$).

Subjective Sleep quality and subjective Feeling in the morning improved significantly from the first to the seventh consult ($p < 0.02$).



Improvement per symptom group

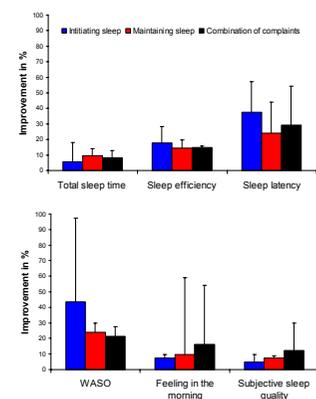
Specific improvement in different sleep parameters were evaluated per symptom group.

Sleep efficiency improved significantly in all 3 symptom groups ($p < 0.001$). For Total Sleep Time improvement, there was a trend towards significance only for the sleep maintenance and combined symptoms groups ($p < 0.01$).

For other sleep parameters symptom-specific improvement were shown.

- Although all groups showed improvements in Sleep Latency, this improvement was only significant in the group with sleep initiating problems ($p < 0.002$).
- WASO also decreased in all groups after treatment, but only for the group with WASO as primary complaint (sleep maintenance group) the improvement was significant ($p < 0.0008$).
- Interestingly, feeling in the morning improved significantly only in the combined symptom group and not in the other two groups ($p < 0.0003$). Similarly, sleep quality improvement showed a trend towards significance only in the combined symptom group but not in the other groups ($p < 0.007$).

Comparison of % improvement after 7 consults between the 3 groups of insomnia symptoms



CONCLUSIONS

- The Somnio model of CBT-I is effective and the effects are similar to data from other studies.
- Somnio online CBT-I is effective for all types of insomnia complaints.
- The amount of improvement in the various sleep parameters depended on the original sleep complaint.