

# Sleep Efficacy of individualized computer assisted Cognitive Behavioral Therapy

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## INTRODUCTION

CBT for insomnia (CBT-I) is an effective treatment for chronic insomnia. However, the availability of consultants is lacking.

To support consultants the multi-component CBT-I is standardized and modeled in a computer. This method provides a systematic and consistent approach to the therapy and increases the efficiency of the consultant.

Patients collect and submit the required data through the internet ([www.somnio.org](http://www.somnio.org)) in order to facilitate timely data collection and ease of use. The Somnio treatment consists of 8 sessions offering sleep hygiene, sleep restriction, stimulus control and cognitive therapy.

Patients enroll for the treatment after completing a symptom check list, a detailed sleep interview and an attitude and beliefs questionnaire.

Before the treatment is started, patients log their desired improvement by the end of the therapy. This paper reports the efficacy of the treatment in realizing the desired goal.

## METHODS

62 Insomnia patients (20 M, 42 F) completed at least 7 of the 8 treatment sessions. The patients had various insomnia symptoms:

initiating sleep	30.6%
maintaining sleep	19.4%
early morning awakening	8.1%
combination of symptoms	41.9%

Based on the information of a weekly sleep diary a personalized treatment was offered every week by a consultant. Communication took place over the internet.

In the first consult the patient also specified their desired sleep pattern. This desired improvement in sleep pattern was compared with the achieved improvement at the 7<sup>th</sup> consult.

The following parameters, derived from the sleep diaries, were used to assess treatment efficacy:

Sleep Efficiency	Number of awakenings
Sleep Latency	Subjective sleep quality*
Total Sleep Time	Feeling in the morning*
WASO	

\* assessed on a 5-point rating scale

The overall improvement over the consecutive consults was tested with a repeated measures multivariate test.

In addition the improvement after the 7<sup>th</sup> consult was compared to the baseline values of the first week, using the non-parametric Wilcoxon signed rank test.

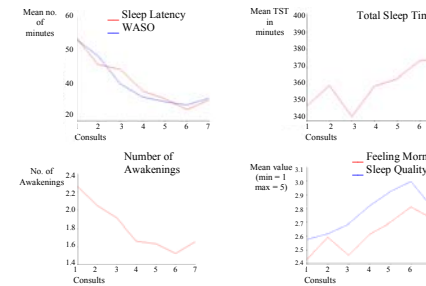
## RESULTS

### Overall effect of the treatment sessions after 7 consults

Sleep improved significantly over the consecutive 7 consults (multivariate repeated measures analysis,  $p < 0.000$ ).

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

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.



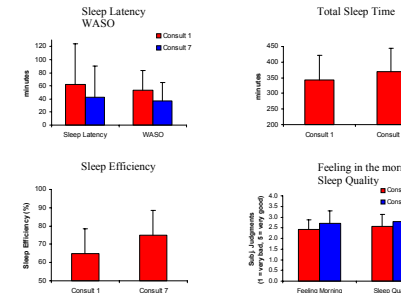
### Comparison of sleep pattern at the end of the treatment with the baseline sleep pattern

All sleep parameters improved significantly between baseline and the 7th treatment session, irrespective of the insomnia complaints.

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 ( $p < 0.02$ ).

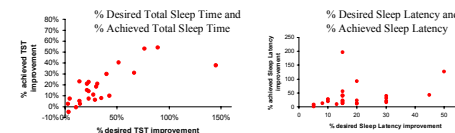


### How much of their desired sleep pattern did the patients actually achieve?

Before the start of the treatment, the patients logged their desired improvement by the end of the therapy.

88.9% of the desired improvement in Total Sleep Time was actually achieved after 7 consults.

65.4% of the desired improvement in Sleep Latency was achieved after 7 consults.



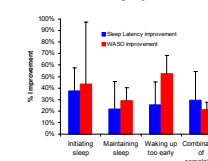
### Has the type of insomnia complaint an effect on the improvement in sleep parameters?

Although the sleep pattern improved for all insomnia complaints, specific effects of the various insomnia complaints were also evaluated.

The group with problems in initiating sleep comparatively showed the highest improvement in Sleep Latency as well as in Total Sleep Time.

The difference between the four complaint types was, however, not significant.

Comparison of % improvement after 7 consults between the 4 groups of insomnia complaints



## CONCLUSIONS

- The Somnio model of CBT-I is effective and the effects are similar to data from other studies
- Even though many patients had unrealistic goals, on average all patients reached their desired goal.
- Somnio CBT-I model is effective for all types of insomnia complaints.