



Digital Clinical Decision Support to Enhance Group Behavior Therapy of Insomnia in Active Duty Service Members with Chronic Pain

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Introduction

- Chronic pain is common across all branches of the military, detracting from operational readiness and contributing to significant healthcare costs within military treatment facilities.¹
- Chronic pain and insomnia frequently co-occur and their co-occurrence is associated with increased pain severity, functional impairment, and psychological distress.
- Effective treatment of insomnia may offer many active-duty service members with chronic pain an avenue toward more effective management of pain.
- Cognitive Behavioral Therapy for Insomnia (CBT-I) is a first-line treatment,² but implementation barriers remain in military settings.
- Digital clinical decision support platforms may enhance delivery and engagement.³

Objective

- To evaluate the effectiveness of CBT-I on sleep disruptions and perceptions regarding pain in patients with comorbid insomnia and chronic pain

Methods

- Participants**
- Active Duty Service Members (ADSM) with sleep complaints concomitant with chronic pain were referred by a physician in the Pain Medicine Center at Navy Medical Center San Diego.
 - Diagnoses of Insomnia were confirmed in assessment.
 - 34 initiated treatment
 - 4 non-completers (attended less than 4 sessions)
 - 30 completers - attended 6.6 (SD = 1.07) sessions
 - 20 Male/10 Female
 - 24 Navy/6 Marines
 - 34.87 (SD = 9.0) years of age
- Treatment**
- Delivered by a licensed psychologist at the Naval Base San Diego Branch Clinic on groups of 5 to 7 patients
 - Eight treatment sessions. See Table 1.
 - Patients tracked sleep daily using a digital clinical decision support platform.
 - Personalized behavioral sleep recommendations were sent to patients using the digital clinical decision support platforms. See Figure 1.
- Assessments**
- Sleep Measures – at every session
 - Insomnia Severity Index (ISI)
 - Sleep Need
 - Perceptions regarding pain - at initial and final session of treatment
 - Pain Catastrophizing Scale
 - Tampa Scale for Kinesiophobia
 - Pain Self-Efficacy Questionnaire
 - Chronic Pain Acceptance Questionnaire

Methods (cont.)

Table 1. Digital Clinical Decision Support Platform

1. Sleep Education	5. Fatigue Management
2. Sleep Restriction	6. Sleep Hygiene
3. Stimulus Control	7. Cognitive Strategies
4. Counter-arousal techniques	8. Relapse Prevention/Shift Work

Figure 1. Digital Clinical Decision Support Platform

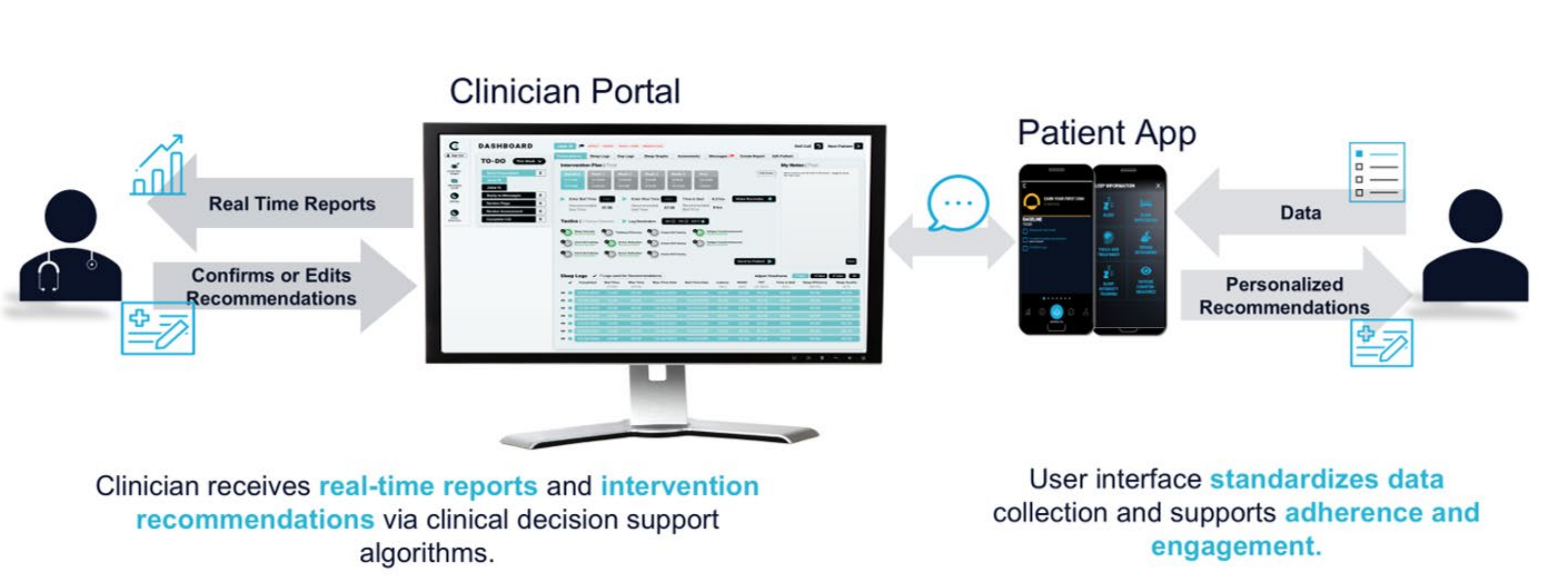


Table 2. Results of Sleep Measures

	Pre	Post	Change
Sleep Latency	49.3 mins	12.9 mins	-36.4 mins***
Wake After Sleep Onset	76.4 mins	28.1 mins	-48.2 mins***
Sleep Efficiency	73.1%	87.0%	13.9%***
Insomnia Severity	19.3	13.0	-6.3***
Sleep Need	14.4	11.6	-2.8***

Table 3. Results of Pain Measures

	Pre	Post	Change
Pain Catastrophizing	20.5	16.9	-3.5+
Kinesiophobia	26.6	24.7	-1.9+
Pain Self-Efficacy	33.4	38.5	5.1*
Pain Acceptance	22.9	26.9	4.0**

+p < .10 *p < .05 **p < .01 ***p < .001

Results (cont.)

- Paired sample *t*-tests revealed statistically significant improvements in all measures of sleep (all *p* values < .001). See Table 2.
- 17 (56.7%) demonstrated clinically meaningful improvement in insomnia severity (i.e., change of 6 or more points on the ISI).
- Paired sample *t*-tests revealed statistically significant improvements in pain self-efficacy and pain acceptance (both *p* values < .05). See Table 3.
- Patients with clinically meaningful improvement in insomnia severity demonstrated large improvements in pain self-efficacy and pain acceptance (both *p* values < .005, Cohen's *d* > 0.9).

Discussion

- Patients in this group treatment experienced improved sleep satisfaction and daytime energy, reduced time spent awake in bed, and improved sleep efficiency.
- Just over half of participants demonstrated clinically meaningful improvement in self-reported insomnia. These patients demonstrated large increases in:
 - Belief that they can complete tasks while in pain (i.e., efficacy)
 - Willingness to experience pain (i.e., pain acceptance)

Conclusion

- Group CBT-I supported by a digital clinical decision support platforms was associated with improvements in both sleep and pain-related cognitive outcomes in ADSM with chronic pain. Digital tools may enhance the feasibility and scalability of CBT-I in military settings. Larger controlled studies are warranted.

Select References

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Acknowledgements

The digital clinical decision support platform used in this treatment was an earlier version of NOCTEM COAST™. We would like to thank Rozhene Sanchez, LVN, for her assistance with data collection and group coordination. We would also like to thank Vikram Mukherjee for his assistance on a prior presentation of this data.