Restoring Effective Sleep Tranquility (REST): A Pilot Study

INTRODUCTION

United States military personnel had been engaged in conflicts in Afghanistan and Iraq since October, 2001 and many have returned with wounds, including mild traumatic brain injury (mTBI), posttraumatic stress (PTSD), depression, pain, and anxiety, which commonly co-occur with insomnia in Veterans.

Sleep disturbances (e.g., chronic insomnia) limit the efficacy of mental health treatments, exacerbate PTSD symptoms, are associated with increased suicide risk, and contribute to poor daytime functioning. Areas of function that may be impacted include:

- Fatigue
- Impaired memory
- Decreased mood and motivation
- Decreased school and work performance

Cognitive behavioral therapy for insomnia (CBT-I) is effective at reducing insomnia, including populations with comorbid conditions (e.g. PTSD and depression). Veterans have limited access to CBT-I; occupational therapists trained in CBT-I could serve to fill this gap.

PURPOSE

The purpose of this study was to examine the feasibility and outcomes of a pilot study of Restoring Effective Sleep Tranquility (REST) - an OT-led CBT-I intervention for military Veterans in college with service-connected injuries.

METHOD

Design: Primary analyses of a non-controlled before-after pilot study

Setting: University research center

Participants: Convenience sample of 7 university students who were post-9/11 veterans with service-connected injuries and self-reported sleep disturbances

Intervention: A multi-component cognitive behavioral therapy for insomnia (CBT-I) intervention:

- Led by occupational therapists and a mindfulness expert
- 7-week protocol involving weekly group and 1:1 sessions
- Group sessions began and ended with meditation practice and consisted of didactic education and group discussion addressing dysfunctional sleep beliefs, stimulus control, and sleep restriction
- 1:1 sessions consisted of review of sleep diary data to enhance adherence to sleep restriction therapy and to promote achievement of personalized sleep-related goals

Measures: All (except sleep diary) completed twice prior to baseline and after 7 weeks of intervention

- Electronic Sleep Diary: Completed daily by participant to calculate total time in bed, total sleep time, and sleep efficiency
- Sleep Problems Index II of the Medical Outcomes Study Sleep Measure (MOS-Sleep): Sleep-related dimensions of initiation, maintenance, respiratory problems, quantity, perceived adequacy and somnolence
- Patient-Reported Outcomes Measurement Information System (PROMIS) Sleep Disturbance (PROMIS-SD): Sleep disturbances
- Pittsburgh Sleep Quality Index Addendum for PTSD (PSQI-A): Disruptive behaviors associated with PTSD-related nightmares and sleep disturbances
- Dysfunctional Beliefs and Attitudes about Sleep Scale - 10 (DBAS-10): Dysfunctional beliefs and attitudes about sleep
- PROMIS Ability to Participate in Social Roles and Activities (PROMIS-AP): Ability to participate in typical social roles and activities
- PROMIS Satisfaction with Participation in Social Roles (PROMIS-SP): Satisfaction with performance of typical social roles and activities
- PROMIS Pain Interference (PROMIS-PI): Pain interference with daily functioning

RESULTS

- Average age = 35.6 ± 7.4 years, 100% were males
- We include means/standard deviations and Cohen’s d for the difference between the pooled baselines and posttest for each variable
- *p < .05; denotes a statistically significant result of paired t-test
- Cohen’s d was interpreted as 0.20 = small, 0.50 = medium, 0.80 = large, and 1.30 = very large

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>Baseline 1 M(SD)</th>
<th>Baseline 2 M(SD)</th>
<th>Difference between Baselines (µ)</th>
<th>Posttest M(SD)</th>
<th>Pooled baselines to Posttest Difference (µ)</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOS-Sleep</td>
<td>55.16 (9.14)</td>
<td>51.83 (11.54)</td>
<td>2.37 (0.06)</td>
<td>28.65 (19.68)</td>
<td>3.29 (0.02)*</td>
<td>1.58</td>
</tr>
<tr>
<td>PROMIS-SD</td>
<td>60.07 (3.82)</td>
<td>59.00 (3.57)</td>
<td>1.04 (0.26)</td>
<td>46.67 (9.35)</td>
<td>3.21 (0.02)*</td>
<td>1.82</td>
</tr>
<tr>
<td>PSQI-A</td>
<td>6.57 (4.43)</td>
<td>8.14 (6.28)</td>
<td>-1.62 (0.16)</td>
<td>4.14 (3.29)</td>
<td>2.79 (0.03)*</td>
<td>0.73</td>
</tr>
<tr>
<td>DBAS-10</td>
<td>4.84 (0.67)</td>
<td>4.63 (0.59)</td>
<td>0.10 (0.46)</td>
<td>2.67 (1.22)</td>
<td>3.63 (0.01)*</td>
<td>2.20</td>
</tr>
<tr>
<td>PROMIS-AP</td>
<td>41.66 (7.31)</td>
<td>43.21 (7.53)</td>
<td>-1.60 (0.09)</td>
<td>47.09 (6.07)</td>
<td>-2.86 (0.03)*</td>
<td>0.69</td>
</tr>
<tr>
<td>PROMIS-SP</td>
<td>40.61 (5.64)</td>
<td>41.79 (2.90)</td>
<td>0.18 (0.61)</td>
<td>45.07 (5.79)</td>
<td>-1.26 (0.25)</td>
<td>0.81</td>
</tr>
<tr>
<td>PROMIS-PI</td>
<td>59.79 (9.08)</td>
<td>58.44 (8.92)</td>
<td>0.88 (0.42)</td>
<td>54.21 (12.59)</td>
<td>1.46 (0.19)</td>
<td>0.45</td>
</tr>
</tbody>
</table>

CONCLUSION

Sleep is an important, but often ignored, activity of daily living. This pilot study indicates that an OT-led 7-week CBT-I intervention may positively impact sleep quality, nightmares, dysfunctional sleep beliefs, and ability to participate in social role activities for post-9/11 veterans with service-connected injuries. It was feasible for occupational therapists with advanced training in CBT-I to deliver this pilot intervention within the context of a community-based university setting.

Acknowledgements: This study was funded by Wounded Warrior Project. Additional contributors to this project include Natalie R. Rolle, MOT, OTR/L; Catherine Schelly, M.Ed., OTR/L; FACOTA; Christine E. Pott, BS; Joshua E. Burns, M.A. We extend our gratitude for the support and implementation of the project to Drs. Margit Hentschel, PhD; Donn Posner, PhD; Mark Petrun, MD; and David Fehrman, MD, as well as Shannon Leevey MOTR/L; Craig Spooner, MS; Erica Billingerley, MS; Adam Kinney, MS, OTR/L; and Michelle Sutherland, BA.