# Sleep Characteristics in Active Duty Service Members with PTSD: Novel Findings and Implications

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## Introduction

Sleep is increasingly recognized as a marker of overall psychological health and resilience. Military personnel can be at higher risk for developing sleep disorders, which negatively impact health, resilience, and operational readiness[1]. Sleep complaints are also a hallmark of post-traumatic stress disorder (PTSD) and sleep disorders are common in patients with PTSD. Several reports have associated PTSD with obstructive sleep apnea (OSA) and sleep disruption[2]. Most of the existing literature on PTSD and sleep focuses on civilian cohorts or veterans[3]. The few studies on active duty service members have been retrospective and/or lacked controls, limiting conclusions. We sought to more definitively define the subjective and objective sleep characteristics of Active Duty Service Members with PTSD.

## Methods

Case-controlled observational cohort at the Sleep Disorders Center of an academic military medical center. Sleep-related questionnaires (Epworth Sleepiness Scale (ESS), Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI)) and polysomnographic (PSG) data were obtained. The diagnosis of PTSD was based on a clinical encounter with a doctoral level behavioral health provider using the Diagnostic and Statistical Manual of Mental Disorders, Fourth or Fifth Editions (DSM-IV or DSM-5). Patients with a history of combat or non-combat related traumatic brain injury (TBI) or abnormal neuroimaging were excluded. Additionally, patients with use of an antidepressant or benzodiazepine medication prior to diagnosis of PTSD were excluded. We compared objective and subjective sleep variables and demographics of Active Duty Service Members with and without PTSD.

## Results

| | PTSD (n=43) | No PTSD (n=126) | p Value |
|---|---|---|---|
| **Average age** | 38.2 years | 38.1 years | 0.96 |
| **Rate of OSA** | 60.47% | 65.88% | 0.52 |
| **Mean AHI** | 10.86/hour | 14.32/hour | 0.17 |
| **Mean total sleep time** | 341.15 minutes | 349.16 minutes | 0.599 |
| **Sleep efficiency** | 83% | 84% | 0.17 |
| **Wake after sleep onset** | 54.19 minutes | 55.22 minutes | 0.75 |
| **Arousal index** | 18.03 | 21.63 | 0.23 |
| **REM sleep percentage** | 18% | 17% | 0.84 |
| **Mean ESS** | 12.88 | 11.88 | 0.35 |
| **Mean ISI** | 20.36 | 15.18 | <0.0001 |
| **Mean PSQI** | 15.42 | 11.05 | <0.0001 |

*The views expressed are those of the presenters and do not reflect the official views or policy of the Department of Defense or its Components. The voluntary, fully informed consent of the subjects used in this research was obtained as required by 32 CFR 219 and DODI 3216.02_AFI 40-402."*

## Discussion

In a relatively young Active Duty cohort, we found that patients with PTSD had more subjective complaints about sleep compared to those without PTSD. However, objective sleep parameters on PSG did not statistically differ between these two groups. This suggests a sleep-state misperception in patients with PTSD that is present at a relatively young age. Previously published research has identified an association between PTSD and sleep disorders including OSA and insomnia that our data did not confirm[4]. However, most of the existing research involves relatively older patients with PTSD that may have more medication usage, comorbid conditions, and possibly substance abuse issues than young military service members temporally closer to their trauma and PTSD diagnosis.

## Conclusions

The findings of this study were unexpected. However, it leads to an important discussion involving sleep perception and possible treatments for patients with PTSD. These findings may encourage earlier intervention and treatment in patients with PTSD having subjective sleep complaints to prevent physiologic and psychological complications in the future.

## Future Directions

Long-term longitudinal analysis of PTSD patients from time of disease onset may further elucidate when and how objective sleep disturbances develop over time. Preventative strategies and early intervention in PTSD patients with subjective sleep complaints may prevent the eventual development of sleep disorders.

## References

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