



Prevalence and Mental Health Correlates of Sleep Disruption Among Military Members Serving in a Combat Zone

Marcus K. Taylor, PhD^{1,2,3}, Susan M. Hilton, MS¹, LCDR Justin S. Campbell⁴, Shiloh E. Beckerley, PhD¹, & CDR Katharine K. Shobe⁵ for the Behavioral Health Needs Assessment Team

- ❖ Large, cross-sectional survey of active-duty and reserve U.S. Navy personnel (N = 3,175) serving in a combat zone.
- ❖ More than half (56%) were classified as sleep deficient, and 67% reported 6 or fewer hours of sleep per day.
- ❖ Individuals endorsing sleep disruption were at substantially elevated risk of posttraumatic stress disorder (PTSD), anxiety, and depression (adjusted odds ratios ranged from 5.2 to 10.7).

BACKGROUND & PURPOSE

- ♦ Military environments pose numerous threats to normal and sufficient sleep, including long or erratic work hours, noise, environmental exposure, and psychological stress.
- ♦ Accordingly, sleep disruption has emerged as a salient concern among military leadership for both service members and veterans. Available evidence suggests that sleep disruption is prevalent in these populations.
- ♦ However, little is known about sleep in individuals deployed to a combat zone. This signifies a crucial gap in our understanding of sleep characteristics in military members across the deployment trajectory.
- ♦ The purpose of the current study was to assess subjective sleep characteristics of U.S. Navy personnel deployed to the Afghanistan ground combat theater in support of Operation Enduring Freedom (OEF). A second purpose was to examine relationships of sleep to mental health symptoms. Substantial sleep disruption was hypothesized, as well as positive associations with mental health disorders.

METHODS

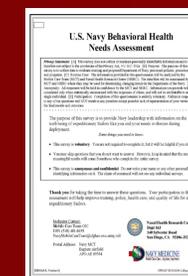
- ♦ **Participants.** 3,175 (80% male) active-duty and reserve Expeditionary Sailors deployed to combat zones in Afghanistan (OEF) (mean ± SD age = 34.1 ± 8.7 years)
- ♦ **Measures.** The Behavioral Health Needs Assessment Survey (BHNAS) is a surveillance instrument designed to assess a diverse population of U.S. Navy personnel deployed to combat zones in Iraq and Afghanistan since 2006.
 - ♦ **Sleep Quality:** hours of sleep per night, sleep deficit, trouble falling asleep, and trouble staying asleep
 - ♦ **Mental Health:** PTSD, anxiety, and depression
 - ♦ **Covariates:** sex, age, pay grade, race, marital status, presence of traumatic brain injury symptoms, combat exposure, sleep medication use during deployment, and psychotropic medication use during deployment
 - ♦ **Analysis.** Descriptive statistics, univariate logistic regression, and multivariate logistic regression

RESULTS

- ♦ Participants reported an average of 5.9 hours (SD = 1.1) of sleep per day despite requiring on average 6.8 hours (SD = 1.0) to feel well-rested.
- ♦ More than half (56%) were classified as **sleep deficient**, and 67% reported 6 or fewer hours of sleep per day.
- ♦ Nearly 1 in 10 participants (9.2%) reported severe or very severe trouble falling asleep, while 10.8% reported severe or very severe trouble staying asleep.
- ♦ Participants endorsing less than 6 hours of sleep per day, classified as sleep deficient (National Sleep Foundation, 2012), or endorsing severe or very severe trouble falling or staying asleep, demonstrated considerably higher adjusted odds of meeting criteria for probable mental health disorders.
- ♦ Of the sleep indices, sleep deficit was the most potent risk factor for probable PTSD (odds ratio [OR] = 10.7; 95% confidence interval [CI], 4.3-26.8), GAD (OR = 9.1; 95% CI, 2.8-29.9), and MDD (OR = 7.5; 95% CI, 2.3-25.0).

Variable	n	GAD			MDD			PTSD		
		OR	95% CI	R ² Δ	OR	95% CI	R ² Δ	OR	95% CI	R ² Δ
Hours of sleep	1816	5.23*	1.58-17.13	2.9%	6.23*	1.47-26.44	2.8%	10.23*	3.19-32.74	4.7%
>6	911	1.00			1.00			1.00		
Sleep deficit	1527	9.12*	2.78-29.95	5.9%	7.51*	2.25-25.03	4.7%	10.69*	4.27-28.79	7.2%
Yes	1200	1.00			1.00			1.00		
Difficulty falling	240	8.33*	4.20-16.52	8.2%	6.71*	3.21-14.02	6.3%	7.57*	4.57-12.52	8.4%
Yes	2487	1.00			1.00			1.00		
Difficulty staying	272	6.71*	3.20-12.27	6.4%	5.43*	2.63-11.21	5.1%	6.94*	4.25-11.35	8.1%
Yes	2452	1.00			1.00			1.00		

Abbreviations: CI, confidence interval; GAD, generalized anxiety disorder; MDD, major depressive disorder; OR, odds ratio; PTSD, posttraumatic stress disorder.
R² Δ reflects unique variance explained beyond covariates. Nagelkerke method is reported.
*p < .001.
†p < .01.
‡p < .05.



CONCLUSIONS

- ♦ This study signifies a distinct advancement in that it reports data from a very large and difficult-to-access sample, highlights the prevalence of sleep disruption among military members serving in a combat zone, and details robust associations with mental health.
- ♦ There is a clear need to validate interventions that improve or protect sleep quality in this potentially vulnerable population.

REFERENCE

National Sleep Foundation (2012). *How much sleep do we really need?* Retrieved from <http://www.sleepfoundation.org/article/how-sleep-works/how-much-sleep-do-we-really-need>



¹Biobehavioral Sciences Lab, Warfighter Performance Department, Naval Health Research Center, San Diego, CA
²Institute for Interdisciplinary Salivary Bioscience Research, Arizona State University, Tempe, AZ
³School of Exercise and Nutritional Sciences, San Diego State University, San Diego, CA
⁴Space and Naval Warfare Systems, Pacific, San Diego, CA
⁵Office of Naval Research, Arlington, VA

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