Sleep Problems and Their Impact on U.S. Servicemembers

RESULTS OF A CROSS-SERVICE SURVEY

As the United States draws down its military forces from Iraq and Afghanistan and increasing numbers of servicemembers reintegrate back into civilian life, the military health system must identify and treat the physical and mental health consequences of war that can persist long after deployments have ended.
Sleep problems are common among servicemembers and are linked to an increased risk of posttraumatic stress disorder (PTSD), depression, suicide, cardiovascular disease, obesity, accidents, and injuries, as well as daytime sleepiness and fatigue. These problems can be detrimental not just to servicemember health but also to force readiness. However, most research has focused on single- or few-item assessments of sleep, typically focusing on sleep duration, and has neglected to consider the many other dimensions of sleep. Moreover, there has been little research on the independent effects of sleep problems on servicemember health and readiness, above and beyond other co-occurring risk factors, in a representative sample of servicemembers across U.S. military branches and components.

A RAND study—the first to comprehensively assess the prevalence and impact of sleep problems in the U.S. military and review the policies and programs related to sleep in the military—found that only 37 percent of servicemembers sleep the recommended seven to eight hours per night, and nearly half the sample had clinically significant poor sleep quality. What factors contribute to such high prevalence of sleep problems among servicemembers, and what are the consequences of short sleep and other sleep problems among servicemembers?

RAND researchers administered a survey to a large and diverse sample of married and deployable servicemembers as part of the RAND Deployment Life Study, a longitudinal assessment of the antecedents, correlates, and consequences for family readiness across the deployment cycle. The findings offer guidance for U.S. Department of Defense and Service-level policies and programs to identify, treat, and prevent sleep problems and maintain a resilient and ready force. Figure 1 shows the research gaps addressed, which

**RAND SLEEP SURVEY answers three questions**

1. What is the prevalence of sleep problems among deployable servicemembers?
2. Is there a difference in prevalence based on prior deployment history in the Army/Navy?
3. Among those who have previously deployed, are sleep problems associated with self-reported outcomes?

Sample includes 1,957 servicemembers from all military branches and components and their spouses enrolled in the RAND Deployment Life Study.
included whether there was a difference in the prevalence of sleep problems according to deployment history.

**Sleep Problems Are Highly Prevalent Among Servicemembers**

Not only was it rare for servicemembers to get the recommended seven to eight hours of sleep per night, but around 31 percent reported getting five hours or less—an amount linked to an increased risk of mental and physical health problems. This rate is much higher than that reported in the general population: Previous research has shown that only around 8 percent of U.S. adults report five or less hours of sleep on average. Civilian samples and military samples tend to differ, however. For example, civilian samples typically capture larger proportions of older individuals and women—but one would expect that older individuals would have a higher rather than lower prevalence of sleep problems, including short sleep duration.

The survey also showed that almost half of servicemembers in the sample had scores above the threshold for clinically significant sleep problems on the Pittsburgh Sleep Quality Index (PSQI). By comparison, only a third of adults in the general population have PSQI scores above this threshold. Figure 2 shows the prevalence of insufficient sleep duration and poor sleep quality across the force.

**The Survey Revealed Details About Servicemembers’ Sleep-Related Behaviors**

In addition to evaluating multiple sleep disturbances, the RAND study examined sleep-related behaviors, including the use of stimulants and sleep medications. Particularly in operational and training environments, it is not unusual for servicemembers to rely on stimulants, such as energy drinks, to stay awake during the day and to turn to sleep aids to help them fall asleep at night. A prior study,

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**Figure 2**

**How Well Do They Sleep?**

Prevalence of poor sleep quality

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<th>PERCENTAGE OF SERVICEMEMBERS</th>
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Almost half of servicemembers have clinically significant sleep problems.

**How Long Do They Sleep?**

Prevalence of insufficient sleep duration

- 7 Hours or More: 37.4%
- 5 Hours or Less: 31.4%
- 6 Hours: 31.3%

Nearly 1/3 get 5 hours of sleep or less per night, an amount linked to an increased risk of mental and physical health problems.
by Joint Mental Health Advisory Team 7, established to assess the behavioral health and treatment of deployed forces, found that almost 50 percent of deployed servicemembers used energy drinks on a daily basis. Less is known, however, about how frequently servicemembers use these products after returning home. In the RAND sample, only 8–10 percent reported daily use of energy drinks, but servicemembers in the sample tended to be older, all were married, and most were not currently deployed, which could help to explain the differences between the RAND and Joint Mental Health Advisory Team studies. The use of sleep medications was more common: More than 18 percent of servicemembers surveyed reported using sleep medications in the past month, which is consistent with use among the general population. It is important to note that these medications have a variety of side effects, and their efficacy and safety in military settings have not been thoroughly studied. Further, as shown in Figure 3, one-third of servicemembers in the RAND study reported being fatigued at least three to four times per week, and about 17 percent reported that a sleep problem impaired their daytime functioning. These daytime symptoms highlight the importance of sleep health for promoting servicemember readiness.

There Is Very Little Difference by Deployment History

Somewhat surprisingly, there were few statistically significant differences in sleep problems or sleep-related behaviors according to deployment history (that is, among service members who had previously deployed, were currently deployed, or had never deployed). Rather, sleep problems, including poor sleep quality, short sleep duration, and fatigue, were prevalent regardless of deployment history. This suggests that sleep problems may be endemic to military culture and not solely the result of being deployed.
HOW MUCH IS FUNCTIONING IMPAIRED?
Sleep-related daytime impairments

How many are fatigued?
- Never: 17.6%
- 1–2 times a month: 22.5%
- 1–2 times a week: 26.8%
- 3 or more times a week: 33%

How many feel that sleep problems interfere with their work or chores?*
- Never: 48.6%
- A little: 34.5%
- Not at all: 16.9%
- Somewhat to very much: 16.9%

*Considered daytime impairment.

HOW DO THEY COPE WITH SLEEP PROBLEMS AND DAYTIME FATIGUE?
Use of sleep medications and stimulants

- Used sleep medications during the prior month: 18.4%
- Used stimulant medications during the prior month: 3.2%
- Used energy drinks at least once a week: 8.6%
Sleep Problems Are Associated with Self-Reported Health and Readiness

Finally, the survey results showed a connection between sleep problems—poor sleep quality, short sleep duration, fatigue, and daytime impairment—and important indicators of health and functioning, including depression, PTSD, poorer physical health, and lower unit readiness. As shown in Figure 4, these associations were evident even after statistically controlling for numerous other risk factors.

The findings regarding mental health problems are consistent with other military sleep studies, but provide an even more conservative analysis, by controlling for numerous co-occurring risk factors. The study is also novel in that it assessed the impact of sleep problems on perceived readiness. These findings also highlight the importance of considering multiple domains of sleep, rather than solely focusing on sleep duration. In fact, poor sleep quality and sleep-related daytime impairment were the most consistent correlates of all four of the outcomes.
Conclusions

Collectively, the findings from the sleep survey attest to the high prevalence of sleep problems among servicemembers, including insufficient sleep duration, poor sleep quality, daytime fatigue and associated impairment, and compensatory behaviors, including the use of sleep medications. They also show that sleep problems are associated with an increased risk of adverse mental and physical health outcomes and compromised operational effectiveness, even after accounting for other factors that are associated with these outcomes.

It is important to note that these analyses are based on a single wave of survey data and that findings are restricted to married servicemembers. More longitudinal research, including samples of both married and unmarried servicemembers, is needed to generalize the findings to the broader servicemember population and examine the extent to which sleep problems predict the development of adverse health consequences and compromised operational readiness in servicemember populations. Future studies are needed to examine whether evidence-based prevention and intervention strategies to promote sleep health can reduce the risk for downstream consequences. If these strategies are effective, they could represent a critical future direction for promoting the health and readiness of the U.S. forces.

Closing Key Gaps in the Research

Servicemembers experience a wide range of sleep problems and at higher rates than the general population.

There are few statistically significant differences in sleep problems according to deployment history, suggesting that sleep problems are endemic to military culture rather than, for example, a direct result of deployment.

Sleep problems are independent risk factors for probable depression, probable PTSD, poorer physical health, and lower unit readiness.

This research highlights the importance of identifying and treating poor sleep quality and short sleep duration in servicemembers to reduce the risk of downstream impairments in health and functioning, as well as consequences for operational readiness.