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THOUGHT LEADERSHIP WHITE PAPER

Sleep Issues in Military Populations and Recommended Interventions

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Sleep is a basic biological function that is crucial to human life. Sleep is essential for information processing and decision-making, memory consolidation, brain waste removal, energy restoration, hormone regulation, and cell repair . Consequently, insufficient sleep may lead to cognitive, emotional, behavioral, and physical difficulties.

Sleep challenges negatively impact resiliency, readiness, and overall fitness for duty among military members and their families. Long work hours, inconsistent work schedules, frequent relocations, austere sleeping environments, combat experiences, and stigma associated with need for sleep are a few of the reasons why the nature of military life, although necessary to ensure our country's security, is not conducive to adequate sleep[2] .

In this whitepaper, Magellan aims to:

- Identify the aspects of military life that may cause or be caused by sleep deprivation,
- Educate on the educational and clinical services currently available to address sleep deprivation in military populations,
- Summarize recommendations for government action

Consequences of Poor Sleep

According to a consensus statement by the American Academy of Sleep Medicine and Sleep Research Society[3], unhealthy sleep is characterized not only by insufficient sleep duration, but also by poor sleep quality, inappropriate timing, and lack of regularity. The consensus statement includes a recommendation of 7 or more hours of sleep per night on a regular basis to promote optimal health in adults aged 18 years and older.

Sleep problems frequently represent risk factors or presenting symptoms of physical or behavioral health conditions[4], but may also exist independently due to lifestyle regimens (e.g., shift work, frequent travel, late night socializing, etc.)[5].

In the short term, consequences of poor sleep may include:

- daytime sleepiness/fatigue,
- learning and memory problems,
- poor reaction time,
- cognitive inflexibility,
- and impaired judgement.

1. *National Institute of Neurological Disorders and Stroke, n.d.; Eugene & Masiak, 2015*
2. *Troxel et al., 2015*
3. *Consensus Conference Panel, 2015*
4. *Centers for Disease Control and Prevention, n.d.*
5. *Shochat, 2012*

In the long term, sleep problems may develop into or exacerbate symptoms of:

- depression,
- anxiety,
- substance use disorders, and
- chronic medical illnesses (pain, autoimmune disease, diabetes, obesity, and cardiac conditions[6]).
- Clinical sleep disorders (Insomnia, Obstructive Sleep Apnea, Narcolepsy, Restless Legs Syndrome, and Circadian Rhythm Disorders) may develop as distinct or co-existing illnesses when sleep problems persist for extended periods of time[7].

Sleep Deprivation in Active Duty Military Families

In a 2021 report[8], the DoD (2021) defined sleep deprivation within the military context as "inadequate sleep that negatively impacts a Service member's military effectiveness, evidenced by a reduced ability to execute complex cognitive tasks, communicate effectively, quickly make appropriate decisions, maintain vigilance, and sustain a level of alertness required to carry out assigned duties" (p.3).

A growing body of research on the effects of sleep problems in military populations confirms direct correlations between sleep deprivation, daily functioning challenges, and subjective distress.

The Deployment Life Study[9] found that military service members' sleep experiences were linked to symptoms of depression, traumatic brain injury, trauma reactions, physical issues, and perceived unit readiness. These outcomes demonstrated that over one-third (approximately 37%) of respondents reported less than the recommended duration of sleep per night (7 hours), and an additional 30% reported less than 5 hours of sleep per night. Almost 50% of respondents reported issues consistent with clinically significant sleep disorders and 17% reported that sleep problems interfered with work or daily living "very much." Results yielded direct correlations between sleep deprivation, depressive disorder, post-traumatic stress disorder, and physical health issues. While there was a minimal correlation between sleep deprivation and total deployments, combat experiences were associated with poor sleep quality and disturbing dreams.

The Military Service Sleep Assessment[10] provided insight into events beyond deployment that are related to sleep disturbances throughout the military life cycle. The most frequently reported military related issues impacting sleep were leadership demands, work schedules, injuries/illnesses, and physical training. Consistent with the general civilian population, the most frequently reported non-military related issues impacting sleep were birth of child/adoption, divorce/marital issue, pregnancy, and death of family member or friend.

6. *Medic et al., 2017*
7. *American Psychiatric Association [APA], 2013*
8. *Department of Defense, Report to Congressional Armed Services Committee, 2021*
9. *Troxel et al., 2015*
10. *Mysliwiec et al., 2021*

Cooper et al. (2021) sought to assess the duration and severity of sleep deprivation among active duty military service members. Service members were studied throughout their entire career and during their transition to civilian life. Findings suggested that 1) longer than average deployments are associated with the onset and recurrence of short sleep duration and insomnia symptoms, and 2) there is a direct relationship between short sleep duration or insomnia symptoms during a military career and reoccurrence of these symptoms throughout a lifetime.

MILITARY CULTURE

In another study, Service member interviews along with input from subject matter experts concluded that military cultural issues potentially serve as barriers to promoting healthy sleep[11]. In addition to environmental circumstances unfavorable to adequate sleep, service members reported a potential stigma associated with expressing the need for rest and seeking help for sleep deprivation.

COMBAT EXPOSURE

Survey responses from military members returning from Iraq and Afghanistan demonstrated that those serving in combat zones reported statistically significant higher rates of insomnia symptoms when compared to those who were not exposed to combat (41% vs. 25% respectively at initial assessment, and 36% vs. 20% at follow-up)[12]. Insomnia in this population was mostly attributed to hypervigilance and guardedness even after real threats subsided (i.e., a symptom of PTSD). A study by Cooper et al. (2021) generated comparable results.

SUICIDE

Service members who endorse sleep deprivation are almost three times more likely to report suicidal behavior than those who deny sleep deprivation[13]. Study outcomes have revealed that sleep deprivation not only presents as a symptom of a mental health disorder, but also as an independent predictor of suicidal behavior[14]. The Suicide Prevention and Response Independent Review Committee (SPRIRC) (2022), in its review of recommendations for military suicide prevention, dedicated a section on the relationship between sleep quality and suicide as well as recommended mitigating suicide risks by addressing poor sleep habits and environments, and other military cultural issues.

Sleep Problems in Military Spouses and Children

Few published studies exist on sleep deprivation in military spouse and child populations. In a survey of over 1,400 female military spouses, 44% reported sleeping 6 hours or less per night. Approximately 54% reported daytime impairment due to sleep problems, and 62% reported daytime fatigue at least 1-2 times per week.

11. Troxel et al., 2015
12. McLay et al., 2010
13. Vargas et al. 2020
14. Lin et al., 2018

SERVICE MEMBERS WHO **ENDORSE SLEEP DEPRIVATION** ARE ALMOST

3X More Likely to report suicidal behavior than those who deny sleep deprivation

Spouses of currently or previously deployed service members reported poorer sleep quality and more fatigue than spouses of service members who had never deployed[15].

Outcomes of a survey administered to military children yielded a correlation between sleeping too little and the duration of a parent's most recent deployment. There was also a partial correlation between difficulties falling asleep and total parental deployments[16].

Interventions to Address Sleep Disturbances in Military Service Members

PHARMACOLOGICAL INTERVENTIONS

- **Caffeine**—Military service members use caffeine, most often consumed through coffee consumption, on a frequent basis to address daytime sleepiness and fatigue. Moderate doses (approximately 200 mg per day for non-habitual users) may improve strength, endurance, and cognitive functioning, but only for limited periods of time. Elevated levels of caffeine disrupt sleep cycles and increase periods of sleep deprivation. During certain military operations, carefully monitored periodic doses of caffeine ensures the maintenance of high performance over time.

  However, higher doses consumed on a consistent basis may build tolerance, resulting in the need for extreme doses to achieve the same results[17].

  Energy drinks are also a frequent source of caffeine, particularly among younger solders[18].

15. *Holliday et al., 2016*
16. *So & Alfano, 2018*
17. *Walter Reed Army Institute of Research, n.d.*
18. *Arrington, 2016*

Energy drinks are not regulated as dietary supplements and contain substances other than caffeine, which have not been studied thoroughly.

- **Stimulants**—Two psychostimulants, Modafinil and Dextroamphetamine, are approved for military aviators, but only in certain situations. The administration of these medications is highly controlled by flight surgeons due to their addicting qualities and adverse side effects[19].
- **Sedatives/Hypnotics**—Prescribed sedatives/hypnotics are useful in inducing sleep. They are used in the miliary to promote sleep prior to known periods of sleep deprivation, address jet lag, and ease problems related to work shift changes. However, regular use of sedatives/hypnotics to address insomnia is contraindicated in military settings, as side effects (daytime drowsiness, dizziness, cognitive impairment, and increased potential for accidents) outweigh benefits[20].

Non-pharmacological interventions

A combination of behavioral and psychological interventions, with consideration for the client's value system and preferences, is recommended to address sleep deprivation.

PSYCHOEDUCATION

The goal of psychoeducation is to teach clients about the causes, course, consequences, prognosis, and treatment options related to a specific illness. The U.S. Army's Performance Triad Guide: Sleep, Activity, and Nutrition is an example of a comprehensive psychoeducational intervention that includes an extensive section on the purpose of sleep, impacts of sleep deprivation, and tips on improving the sleep experience.

COGNITIVE BEHAVIORAL THERAPY FOR INSOMNIA (CBT-I)

CBT-I is the non-pharmacological treatment considered effective for both short-term and chronic insomnia[21]. CBT-I focuses on restructuring distorted or negative thoughts about sleep through psychoeducation, counseling, and behavioral interventions. Behavioral interventions may include breathing and relaxation therapy, sleep hygiene practices, brief sleep restriction, and stimulus control.

IMAGERY REHEARSAL THERAPY (IRT)

For those military connected individuals who experience nightmares, IRT, a form of CBT, may be effective. IRT uses education on the association between trauma and dreams, followed by therapist-guided exercises to replace frightening components of nightmares with neutral or pleasant content[22].

MOBILE APPLICATIONS

The DoD and Department of Veterans Affairs promote mobile applications to aid military populations in addressing sleep challenges. In its 2021 sleep report, the DoD lists five empirically supported interventions that include—education and experiential exercises on breathing, meditation, sleep diaries, imagery rehearsal therapy, and sleep hygiene.

19. *Caldwell & Caldwell, 2005*
20. *Schutte-Rodin et al., 2008*
21. *Newsom & Dimitriu, 2023*
22. *Abanese et al., 2022*

Magellan's Recommendations to Address Sleep Challenges in Military Populations

The literature review conducted for this report acknowledges that sleep deprivation is pervasive in military populations, including spouses and children. Causes of sleep deprivation span from direct military experience to stressors similar to those reported in civilian populations.

Magellan offers the following recommendations to the government to mitigate risks associated with sleep issues. While many of the recommendations are contingent on military policy and culture modifications, others include enhancements to existing initiatives, including psychoeducation, consultation, cognitive and behavioral change therapies, and referrals to medical services when clinically indicated.

- Provide leadership and service member education. Provide the Services with psychoeducational presentations for both leadership/command/staff and service members/families on the 1) purpose and importance of sleep, 2) consequences of insufficient sleep, and 3) simple tips to improve the quality of sleep, including evidenced-based guidelines on the use of caffeine, energy drinks, and other supplements. See Magellan Health Insights article on the importance of sleep and tips to cope with sleep disruptions.
- Expand adaptation and training of brief behavioral interventions to address key sleep problems in primary and specialty care. Request training on the identification of sleep issues, aspects of CBT-I within program scope to address them, and signs that may warrant referrals to medical treatment for all military provided counselors. A simple question, "how are you sleeping?" may generate discussion about problems of and solutions to sleep challenges.
- Create a repository for sleep resources. Promote government supported resources for sleep health in counseling service delivery and external facing resources. This includes providing access to mobile applications for sleep management (e.g., sleep logs and relaxation exercises)

Conclusion

A growing body of research on the effects of sleep problems in military populations confirms direct correlations between sleep deprivation, reduced readiness, sub-optimal performance, and subjective distress. Magellan military counselors possess the skills necessary to provide customized non-medical counseling, education, and/or referrals based on the nature and severity of sleep complaints.

Magellan is pleased to provide this summary and invites collaboration with the government to further address the growing problem of sleep challenges in military populations. Magellan remains committed to assisting military members and their families in achieving a high quality of life, thereby ensuring resiliency and readiness to serve our country.

Author Bio

Joyce Trzoniec, has over 20 years of experience in behavioral health service, including consumer education, prevention programs, population health, healthcare quality improvement, and managed care administration. She currently serves as the Director, External Communications for the Military & Family Counseling Program contract at Magellan Federal; and prior to this role, Ms. Trzoniec oversaw quality and compliance of the same program. Her passion involves motivating individuals to achieve optimal emotional and physical health through awareness and illness-prevention strategies.

References

1. American Psychiatric Association. Sleep Wake Disorders. In Diagnostic and statistical manual of mental disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
2. Albanese, M., Liotti, M., Cornacchia, L., & Mancini, F. (2022). Nightmare rescripting: Using imagery techniques to treat sleep disturbances in post-traumatic stress disorder. Frontiers in Psychiatry, 13. https://doi.org/10.3389/fpsyt.2022.866144
3. Arrington, Y.R. (2016). The science behind why you should stop chugging so many energy drinks. U.S. Army https://www.army.mil/article/180140/the_science_behind_why_you_should_stop_chugging_so_many_energy_drinks
4. Caldwell, J.A. & Caldwell, J.L. (2005). Fatigue in military aviation: An overview of U.S. military-approved pharmacological countermeasures. Aviation, Space, and Environmental Medicine, 76(7 Suppl), C39-51. https://www.researchgate.net/publication/7726953_Fatigue_in_military_aviation_An_overview_of_US_military-approved_pharmacological_countermeasures
5. Centers for Disease Control and Prevention. (n.d.) Basics About Sleep. https://www.cdc.gov/sleep/about_sleep/index.html
6. Consensus Conference Panel (2015). Recommended amount of sleep for a healthy adult: A joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society, Sleep, 38(6), 843–844. https://doi.org/10.5665/sleep.4716
7. Cooper, A. D., Kolaja, C. A., Markwald, R. R., Jacobson, I. G., & Chinoy, E. D. (2021). Longitudinal associations of military-related factors on self-reported sleep among U.S. service members. Sleep, 44(12). https://doi.org/10.1093/sleep/zsab168
8. Department of Defense. Report to Congressional Armed Services Committee. (2021). Study on the effects of sleep deprivation on readiness of members in the armed forces. https://www.health.mil/Reference-Center/Reports/2021/02/26/Study-on-Effects-of-Sleep-Deprivation-on-Readiness-of-Members-of-the-Armed-Forces-Final-Report
9. Eugene, A. R., & Masiak, J. (2015). The Neuroprotective Aspects of Sleep. MEDtube science, 3(1), 35–40. https://pubmed.ncbi.nlm.nih.gov/26594659/
10. Holliday, S.B., Haas, A., Shih, R. A., & Troxel, W. M. (2016). Prevalence and consequences of sleep problems in military wives. Sleep Health, 2(2), 116–122. https://doi.org/10.1016/j.sleh.2016.03.004
11. Lin, H.T., Lai, C.H., Perng, H.J., Chung, C.H., Wang, C.C, Chen, W.L. & Chien, W.C. (2018). Insomnia as an independent predictor of suicide attempts:

A nationwide population-based retrospective cohort study. BMC Psychiatry, 18(117). https://doi.org/10.1186/s12888-018-1702-2

12. McLay, R. N., Klam, W. P., & Volkert, S. L. (2010). Insomnia is the most commonly reported symptom and predicts other symptoms of post-traumatic stress disorder in U.S. service members returning from military deployments. Military medicine, 175(10), 759–762. https://doi.org/10.7205/milmed-d-10-00193
13. Medic, G., Wille, M., & Hemels, M. E. (2017). Short- and long-term health consequences of sleep disruption. Nature and Science of Sleep, 9, 151–161. https://doi.org/10.2147/NSS.S134864
14. Mysliwiec, V., Pruiksma, K. E., Brock, M. S., Straud, C., Taylor, D. J., Hansen, S., Foster, S. N., Gerwell, K., Moore, B. A., Carrizales, F. A., Young-McCaughan, S., Vanecek, R., Mintz, J., Peterson, A. L., & STRONG STAR Consortium (2021). The military service sleep assessment: an instrument to assess factors precipitating sleep disturbances in U.S. military personnel. Journal of Clinical Sleep Medicine, 17(7), 1401–1409. https://doi.org/10.5664/jcsm.9206
15. National Institute of Neurological Disorders and Stroke. (n.d.) Brain basics: understanding sleep. https://www.ninds.nih.gov/health-information/public-education/brain-basics/brain-basics-understanding-sleep#:~:text=Without%20sleep%20you%20can't,neurons)%20communicate%20with%20each%20other.
16. Newsom, R. & Dimitriu, A. (September 13, 2023). Cognitive behavioral therapy for Insomnia (CBT-I): An overview. Sleep Foundation. https://www.sleepfoundation.org/insomnia/treatment/cognitive-behavioral-therapy-insomnia#:~:text=CBT%2DI%20focuses%20on%20restructuring,insomnia%20and%20better%20quality%20sleep.
17. Schutte-Rodin, S., Broch, L., Buysse, D., Dorsey, C., & Sateia, M. (2008) Clinical guideline for the evaluation and management of chronic insomnia in adults. J Clin Sleep Med 2008 4(5):487–504. https://jcsm.aasm.org/doi/pdf/10.5664/jcsm.27286
18. Suicide Prevention and Response Independent Review Committee (2022). Preventing Suicide in the U.S. Military: Recommendations from the Suicide Prevention and Response Independent Review Committee. https://media.defense.gov/2023/Feb/24/2003167430/-1/-1/0/SPRIRC-FINAL-REPORT.PDF
19. Shochat T. (2012). Impact of lifestyle and technology developments on sleep. Nature and science of sleep, 4, 19–31. https://doi.org/10.2147/NSS.S18891
20. So, C.J., & Alfano, C.A. (2018) 0260 The Effects of Military Parents' Deployments on Children's Sleep. Sleep, 41(Supp.1), A100–A101, https://doi.org/10.1093/sleep/zsy061.259
21. Troxel, W.M., Shih, R.A., Pedersen, E.R., Geyer, L., Fisher, M.P. Fisher, Griffin, B.A., Haas, A.C., Kurz, J., Steinberg, P.S. (2015). Sleep in the military: Promoting healthy sleep among U.S. servicemembers. Rand Health Quarterly, 5(2), 19. https://www.rand.org/pubs/research_reports/RR739.html
22. Vargas, I., Perlis, M. L., Grandner, M., Gencarelli, A., Khader, W., Zandberg, L. J., Klingaman, E. A., Goldschmied, J. R., Gehrman, P. R., Brown, G. K., & Thase, M. E. (2020). Insomnia Symptoms and Suicide-Related Ideation in U.S. Army Service Members. Behavioral sleep medicine, 18(6), 820–836. https://doi.org/10.1080/15402002.2019.1693373
23. Walter Reed Army Institute of Research (n.d.). Caffeine and Performance in the Operational Environment. https://media.defense.gov/2023/Apr/05/2003193402/-1/-1/1/CAFFEINE-AND-PERFORMANCE-FACT-SHEET-WRAIR-V1.PDF
24. U.S. Army (2015). The performance triad guide. Sleep, activity, and nutrition. U.S. Army. https://ephc.amedd.army.mil/HIPECatalog/Uploads/DownloadableProds/684_P3%20Guide%20TEXTBOOK%202-18-2015%20web.pdf

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