



The Role of Reproductive Health in Nightmares and PTSD in Active Duty Military Personnel

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Introduction

- Women often experience changes to their sleep due to hormonal fluctuations such as their menstrual cycle and menopause.
- Women higher in progesterone and men low in testosterone are more vulnerable to the effects of sleep deprivation on emotional processing tasks (Lustig et al., 2018).
- Sex differences and sex hormones have been shown to impact fear conditioning as well as extinction (Milad et al., 2006).
- Women have a higher lifetime prevalence of PTSD and greater risk of developing PTSD following trauma exposure (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995) even when controlling for trauma type (Tolin & Foa, 2006).

Methods

Participants: Data presented here are based on a sample of active duty military personnel referred for a clinically-indicated sleep evaluation and polysomnography. This sample included 102 men and 47 women who had a diagnosis of insomnia, sleep apnea, or comorbid insomnia and sleep apnea.

Measures:

- **PTSD Symptoms:** The PTSD Checklist for DSM-5 (PCL-5), a 20-item self-report measure that assesses the 20 DSM-5 symptoms of PTSD (Weathers et al., 2013).
- **Nightmares:** The Nightmare Disorder Index, a 5-item self-report measure developed to assess nightmare frequency, duration, and impact.
- **Reproductive Health:** The Sleep and Reproductive Health Questionnaire, a self-report measure developed by our team that includes questions about hormone treatment and diagnosis of different conditions for both men and women.

- The relationship between having at least 1 **menstrual cycle** in the last year and **distress due to nightmares** in women was significant.
- Women report significantly more avoidance symptoms related to PTSD than men.
- In men, the relationship between being treated for **low testosterone** and **nightmare frequency** was significant.

Results

Table 1. Contraceptive Use and Mean PCL-5 Subscale Scores

Type of contraceptive used in the past 12 months	Mean Negative Mood and Cognition Subscale Score
Oral	2.8 (n=8)
IUD	6.7 (n=7)
Ring	3.5 (n=2)
Patch	23.0 (n=1)
Implant	9.0 (n=2)
Other	12.0 (n=2)

Table 2. Menstrual Cycles Within Past Year and Extent of Nightmare Distress

Nightmare Distress	No menstrual cycle within the past year (n=8)	At least 1 menstrual cycle within the past year (n=29)
Not at All	n=0	n=5 (17.0%)
A Little	n=0	n=13 (45.0%)
Somewhat	n=5 (62.5%)	n=6 (21.0%)
Much	n=2 (25.0%)	n=4 (14.0%)
Very Much	n=1 (12.5%)	n=1 (3.0%)

Results contd.

- Women having or not having a menstrual cycle within the past year was significantly related to distress experienced due to nightmares with those not having a menstrual cycle reporting more distress from nightmares $X^2(4) = 10.008, p < .05, N=37$.
- No significant differences were found between men and women on total PCL-5 scores. A significant difference was found, however, when comparing the subscales of the PCL-5, with women reporting significantly more avoidance symptoms than men $t(147) = -2.134, p = 0.048$.
- Our findings show that in men there is a significant relationship between being treated for low testosterone and nightmare frequency $X^2(3) = 9.698, p < .05, N=102$, however only 2/102 endorsed receiving testosterone treatment so this should be interpreted with caution.
- The relationship between type of birth control being used for women and negative alterations in mood and cognition (a subscale of the PCL-5) approached significance ($p=.065$), with women using the patch reporting more negative mood and cognitions compared to women using other forms of birth control (i.e. oral contraceptive, IUD, ring, implant or other).
- No significant differences on the PCL-5 were found among men who were being treated for low testosterone or erectile dysfunction and those not being treated.

Discussion

- Our results suggest that there may be a role of reproductive health in nightmares and PTSD in active duty personnel.
- Future studies should examine the impact of specific biomarkers such as sex hormones on nightmares and PTSD symptoms.

Acknowledgments & Disclaimers

Disclaimer: 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. **Acknowledgments:** This study is supported by the Defense Health Agency, Defense Medical Research and Development Program, Clinical Research Intramural Initiative for Military Women's Health.