in various locations around the world participated in the 2-week study. Participants wore actigraphs, completed activity logs, and performed a three-minute Psychomotor Vigilance Task (PVT) before and after standing watch. In addition, they completed sleep habits and mood states questionnaires at the beginning and end of the study.
Results: Participants slept 6.74 hours/day, with 19% sleeping less than 6 hours on average. At the outset of the study, ~62% of the participants reported insomnia symptoms and were classified as poor sleepers. Although sleep duration did not differ between schedules, participants on the 8-hour shifts made fewer errors and showed less variability in PVT (e.g., fewer lapses combined with false starts) compared to those individuals working on 12-hour shifts. Participants on 12-hour shifts were nearly twice as likely to be identified as poor sleepers compared to those on 8-hour shifts. Finally, many more participants reported personal preference of the 8-hour over the 12-hour shift schedule. The top three issues identified as interfering with sleep were temperature, light, and noise.
Conclusion: Results show that sleep quality, quantity, and sleeping conditions remain problems for these military shift workers. Preliminary findings suggest that the 8-hour shift schedule is preferable to the 12-hour one, both in terms of personal preference and performance. Efforts are underway in this population to assess the use of High Energy Visible (HEV) blue light-blocking glasses to facilitate circadian entrainment and improve sleep during daytime hours. The views expressed are those of the authors and do not necessarily reflect the official policy or position of the DoN, DoD, or the U.S. Government.
Support (If Any):

0172
PREVALENCE OF INSOMNIA AND EXCESSIVE DAYTIME SLEEPINESS IN US NAVY SAILORS
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Introduction: The most common sleep-related complaint in civilian populations is insomnia. Workers in the U.S. Navy regularly experience significant levels of sleep deprivation and circadian misalignment due to long workdays and chronic shiftwork. This study assessed the prevalence of insomnia and elevated daytime sleepiness of crewmembers underway on a United States Navy ship while working.
Methods: Crewmembers (N=166, n=90 working on a fixed watchstanding schedule, n=76 on a rotating schedule) from the Reactor Department of the USS NIMITZ volunteered in this study. Sleep was assessed with actigraphy. Insomnia was assessed with the Insomnia Severity Index (ISI), and the Epworth Sleepiness Scale (ESS) was used to assess sleepiness.
Results: Participants slept an average 6.75 ± 0.94 hours/day. ESS scores were negatively correlated with sleep duration ($r=-0.175$, $p=0.033$); ISI scores were positively correlated with the number of sleep episodes per day ($r=0.221$, $p=0.007$). ESS scores (mean=9.91 ± 4.66) indicated that 45% of the participants had excessive daytime sleepiness—EDS (ESS score>10). ISI scores (mean=11.5 ± 5.20) indicated that 66% of the participants have symptoms of insomnia (ISI score≥10). Approximately 36% of the participants had EDS and comorbid insomnia symptoms, 30% had insomnia without EDS, while 9% had EDS without insomnia symptoms. The prevalence of EDS and insomnia was modulated by the type of the watchstanding schedule. For participants on the fixed schedule, the prevalence of insomnia was 57% for the EDS group and 35% for the normal sleepiness group ($p<0.001$). In the rotating schedule, however, the prevalence of insomnia was ~86% for both EDS and normal sleepiness groups ($p>0.9$).
Conclusion: Both excessive daytime sleepiness and insomnia remain problems for crewmembers working at sea. Results show that, as expected, sleepiness increased with level of sleep deprivation. The prevalence of insomnia increased dramatically when crewmembers worked rotating, non-circadian schedules in which their sleep was split into multiple episodes during the day. The latter result suggests that these rotating non-circadian schedules induce insomnia symptoms due to circadian misalignment and irregular sleep patterns.
Support (If Any):

0173
CHANGES IN SLEEPINESS RATINGS ACROSS SHIFTS AMONG MOTORCOACH DRIVERS
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Introduction: The timing of shift start affects motorcoach drivers' ratings of sleepiness. Here we compare the start of work sleepiness ratings to those made at the end of work among commercial motorcoach drivers.
Methods: Seventy-eight commercial motorcoach drivers were monitored for approximately one month as they completed their usual work and rest schedules. Drivers kept a sleep/work diary, continuously wore an actigraph to record sleep/wake, and self-rated their sleepiness with the Karolinska Sleepiness Scale at the start and end of work periods. Sleep duration within each 24-hour period preceding duty start was summed, and shift end times were binned into morning (06:00 to 13:59), afternoon (14:00 to 21:59), and night (22:00 to 05:59). Changes in sleepiness ratings were analysed using linear mixed-effects models.
Results: During the study period 1,518 work periods were observed, though pre- and post- work ratings for both measures were available for only 1306 shifts. Work periods tended to end in the afternoon (mean = $17{:}24 \pm 5{:}46$) and averaged 9.2 (± 3.0) hours in duration. Drivers obtained a mean of 6.4 (± 1.6) hours of sleep during the 24 hours prior to duty start. Subjective sleepiness ratings were highest following shifts that ended in the night. Post-shift sleepiness ratings were predicted by rating at shift start, duration of shift, and timing of shift end. Total sleep time in the 24 hours of shift start did not predict end-of-shift sleepiness ratings.
Conclusion: Duration of pre-work sleep did not predict sleepiness scores at the end of the shift, while operational factors such as shift length, shift timing, and the pre-work sleepiness ratings were important in determining end-of-shift sleepiness levels. Though shift timing is usually dictated by commercial demands in motorcoach operations, these data suggest that shift timing is an important consideration in managing sleepiness.
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0174
THERE AND BACK AGAIN: CIRCADIAN MODULATION OF SLEEP IN PILOTS FLYING ULTRA-LONG RANGE FLIGHTS
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Introduction: Ultra Long Range (ULR; 16+ hour) flights cross multiple time zones. Therefore during layover (26–40 hours), the light/dark cycle is radically out of phase relative to home base time. The question is to what degree do pilots shift or readjust their sleep/wake cycle during layover and post-flight days as measured by synchronization to home base time.
Methods: Pilots' sleep/wake history was recorded by actigraph and a sleep/work logbook from three days prior to the outbound flight through three days following the inbound flight. The sleep/wake