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Sleep disturbances after deployment: National Guard soldiers' experiences and strategies

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Abstract

Sleep deprivation and sleep disturbance are pervasive among military personnel during and after combat deployment. However, occupational and other constraints often influence military workers to decline behavioral health services and prescription pharmaceutical sleep aids. This article, drawing on ethnographic interviews with National Guard veterans of combat deployment, demonstrates that soldiers with sleep disturbance frequently manage symptoms without medical supervision and by using ad hoc methods including alcohol use. Findings suggest the potential significance of further research into the sleep management practices of military populations, who face both high risk for sleep disturbance and occupational and cultural constraints in effectively managing these serious health concerns.

Introduction

This article considers the efforts of military personnel to manage sleep disturbance following combat deployments, where obstacles to normal sleep are frequently significant. Numerous recent studies have described the prevalence and severity of sleep disturbance among military workers during overseas deployments (c.f. Chapman et al. 2015, McLay et al. 2010, Miller et al. 2011, Taylor et al. 2014, Troxel et al. 2015). Both the occupational culture of the military and the environmental conditions of combat zones challenge the ability of personnel to sleep regularly and adequately during deployment (Troxel et al. 2015, Peterson et al. 2008, McLay et al. 2010). Returned military personnel frequently experience sleep disturbances persisting after deployment, with high rates of poor sleep quality and insufficient sleep duration (Troxel et al. 2015:63, Seelig et al. 2010, Luxton et al. 2011).

Sleep disturbance can signal potentially significant consequences for physical health (Altevogt & Colten, 2006). Owing to the high prevalence of sleep problems among military workers, the downstream consequences of combat deployment on sleep represent an important area for public health research. Studies among deployed National Guard soldiers have shown that sleep impairment may serve as an indicator for the likelihood of experiencing other PTSD symptoms (Gilbert et al., 2015), and that sleep problems

“contribute significantly to the prediction of diagnoses and symptoms of PTSD and depression up to a period of two years post-deployment” (Koffel et al., 2013). Because insomnia is the mental health symptom most frequently reported by service members returning from deployments (McLay et al. 2010), it represents an area where focused interventions could achieve significant health benefits in this population (Gilbert, Kark, Gehrman, & Bogdanova, 2015).

However, these efforts should ideally be informed by research on the perspectives of military personnel on mental and behavioral health interventions and the actual practices that military personnel implement to manage their problems with sleep. Individuals with military experience may be predisposed to stigmatize psychological conditions and to resist medicalizing behavioral disturbances (Warner et al. 2011). Sleep difficulties, like other mental and behavioral health issues, are under-reported in this population (Troxel et al. 2015). As the findings of our qualitative interviews with formerly deployed soldiers suggested, military personnel may avoid formal medical treatment for sleep difficulties and instead attempt to manage sleep using ad hoc methods, including self-medication with alcohol and over-the-counter pharmaceuticals. To our knowledge, no scholarly or policy literature has focused on these methods of sleep regulation in military populations, estimated their prevalence, or assessed their potential effects on health. This article responds to that absence in the literature, addressing how military personnel attempt to manage disturbed sleep patterns after returning from combat deployments.

Our analysis of qualitative data resulting from interviews with previously deployed members of the US National Guard touches on four interrelated issues: sleep and sleep problems in combat zones, sleep problems after returning from deployment, the consequences of sleep disturbance, and the methods that these soldiers use to manage sleep problems. Whereas this article focuses upon an occupational population at elevated risk for sleep problems and their health sequelae, sleep problems are also increasingly prevalent in the general population (Ferrie et al. 2011). It is our hope that this article will contribute to a fuller understanding among clinicians, public health practitioners, and sleep researchers of the techniques that individuals use to manage sleep/wake cycles in the face of severe disruption, including combat and other forms of trauma.

Methods

We base our analysis on ethnographic interview data with 101 members of the US Army National Guard (USARNG); as detailed below, these respondents were purposively selected from a larger sample of 928 USARNG screener survey respondents. The study was reviewed and approved by the Institutional Review Board of Institute for Research and Evaluation. With guidance from the Medical Command (MEDCOM) of the Hawaii Army National Guard, the study dossier was reviewed by the National Guard Bureau and the Bureau of Medicine and Surgery (BUMED) Army Human Subjects Protection office. The National Guard Bureau and BUMED also provided approval and endorsement for the project. Confidentiality measures were implemented in all aspects of the study.

Survey Participants

We invited participants to join the study according to the following protocol: From 2013–2014, our study team (three anthropologists) collected screener surveys from servicemen and servicewomen on National Guard bases in Hawai'i and New Mexico. Contacts in the ARNG Medical Command assisted the study team in prospectively recruiting companies with high percentages of deployed personnel. We provided verbal descriptions of our study to groups of soldiers who had assembled for annually scheduled medical screening events. Screener surveys included items from the PTSD Checklist-Military version (PCL-M, an assessment measuring post-traumatic stress disorder symptoms among military personnel) and the Alcohol Use Disorders Identification Test (AUDIT). These items permitted the measurement – but not the diagnosis – of respondents' potential symptoms of PTSD and disordered alcohol use. The surveys also collected demographic data including age, gender, marital status, and racial/ethnic identities, length of service, occupational specialization, and duration and location of deployments.

Inclusion criteria for survey respondents were current membership in the Hawai'i or New Mexico Army National Guard and experience of deployment. Survey respondents provided informed consent and received a \$10 Visa gift card and information regarding social and mental health services in their geographic area. The completed sample included screener surveys from 928 individuals, of whom 91.6% male and 8.1% female. Racial and ethnic diversity in the screener survey sample was diverse, reflecting the demographics of states in which we conducted research (Table 1). The median age of respondents was 34.

Qualitative interview participants

The goal of the qualitative segment of the study was to interview 50 soldiers from each of the two state National Guards. We used survey screener findings to ensure that the soldiers we interviewed had experience with PTSD symptoms. Subsequent to completing survey screener collection, the study team identified respondents who reported multiple symptoms of PTSD or substance use disorders at above-median rates. We then attempted to contact these individuals and solicit their participation. Of the 928 survey respondents, 208 or 22.4% declined to provide a zip code. Of the individuals who provided contact information, some were no longer reachable, and some decided not to take part in the interview. We stopped recruiting once we reached our quota of 50 interview respondents per state. Ultimately, we assembled a sample of geographically and demographically diverse individuals who met the following criteria: (1) survey responses indicating above-median potential symptoms of PTSD and/or substance use disorder, and (2) provision of informed consent to participate in a face-to-face interview with a researcher.

Over a series of research trips in 2014 and 2015 to locations in Hawai'i and New Mexico, the study team proceeded to conduct face-to-face open-ended, semi-structured interviews. The sample of interviewees comprised 101 individuals (49 in Hawai'i, 52 in New Mexico; 14% female, with a diverse racial/ethnic background similar to that of the entire survey screener sample, as noted in Table 1). The battalions from which we drew the survey sample included infantrymen, and deployment locations included Afghanistan, Iraq, Bosnia, and

Egypt. Table 2 outlines the range of deployment duration in these different deployment settings, both for the survey screener sample and the qualitative interview sample as well.

The responses elicited in these qualitative interviews supply the primary data that we analyze in this article. Interview respondents provided informed consent and received a \$50 Visa gift card and information regarding social and mental health services in their geographic area. Interviews were recorded and transcribed, then thematically coded by all three authors and analyzed (cf. Ames et al. 2014) using a qualitative data software package, ATLAS.ti 7.

Our original interview prompts included questions about deployment experiences, post-deployment experiences, post-traumatic stress disorder, and alcohol and drug use. However, they did not include questions about sleep. This issue (insomnia) quickly rose to our attention during early interviews, as many respondents reported sleep problems spontaneously, despite sometimes appearing reluctant to speak openly about other behavioral or mental health concerns. In recognition of the potential seriousness and pervasiveness of this issue, we incorporated questions about sleep into subsequent versions of our interview schedule, as noted below in the results section.

For this paper, the interview excerpts in which multiple coders identified respondent discussions of sleep problems were subsequently reviewed for information about respondents' perceived sources of disordered sleep and the ways in which insomnia manifested itself in their narratives. In the process of analysis, we sought to identify recurring patterns of problematic sleep (for example, when the same transcript segment featured overlapping codes of sleeplessness as well as other PTSD symptoms). We also noted distinctive methods of coping with post-deployment insomnia. Using pseudonyms to protect soldiers' confidentiality, we present brief illustrative quotes, with information about the date and the state in which the interview was conducted.

We mention the number of interviews in which each of the narrow themes discussed appear (e.g., that six soldiers explicitly stated that sleep in an active shelling zone is difficult) that are tied to the illustrative quotes from the interviews. However, we include the important caveat that we are not making claims of statistical significance with counts of appearances of themes, particularly because interviewer prompts about sleep problems were fairly open-ended. Rather, such theme counts merely suggest that each quote presented is not entirely unique but instead represents an experience shared by multiple soldiers.

Results

Both our quantitative survey data and qualitative interview data paralleled prior study findings that sleep problems are highly prevalent among military personnel who have been deployed. In our sample of 928 screener survey responses, over 50% of respondents reported experiencing some degree of sleep problems following deployment. "Trouble falling asleep or staying asleep" was the second-highest rated item on the 17-item PCL-M ($M = 2.05$, $SD = 1.24$). PCL-M items highly correlated with sleep impairment included "having trouble concentrating" [$r(924) = .65$, $p < .001$] and "feeling irritable or having angry outbursts"

[$r(917)=-.63, p<.001$]. Surveyed regarding their impaired ability to fall or stay asleep, seventeen percent of respondents endorsed the top two scale items on a five-point scale (“quite a bit” and “extremely”).

Findings from thematic analysis of 101 face-to-face interviews also demonstrated a high prevalence of sleep problems among a cohort of soldiers with symptoms of PTSD and/or alcohol and other substance use disorders. Of 101 participants in face-to-face interviews, 82 (81%) reported experiences of sleep problems during and/or after a combat deployment. Of the 101 respondents, we directly asked 62 about their sleep patterns, and asked follow-up questions about sleep with another 16 who had raised the topic – a total of 78 individuals. There were 23 individuals whom we did not ask about sleep specifically. This paper’s findings are based on the responses of the 78 individuals with whom we discussed sleep patterns and sleep disturbance. Respondents reported using diverse strategies for managing sleep problems. The following sections discuss how respondents experienced sleep problems both during and after deployment, and the strategies they used to manage sleep problems after deployment.

“Never any safe area”: sleep and sleep problems in combat zones

Sleep deprivation and sleep disturbance are pervasive among military service members during combat deployments, “despite policies that emphasize the importance of sleep and fatigue management” (Miller et al. 2011). Research has suggested military personnel working in combat zones experience frequent and serious sleep difficulties that may be induced by the occupational conditions that characterize combat situations (Mysliwiec et al. 2010) Indeed, as our respondents emphasized, military operations prompt personnel to the awareness that physical harm is always potentially imminent. One respondent, who had experienced a yearlong deployment in Iraq as a military policeman in a forward operations base noted that night in a combat zone raised the terrifying possibility of dying in one’s sleep, and that this realization prevented him from sleeping.

The most stressful thing that I had to deal with was probably getting mortared when we were in our FOB, when I first arrived. For the first couple of months, I didn’t sleep at all, ‘cause we had a lot of mortars that were going into our FOB and just exploding. At that time, I was really scared. If I go to sleep, am I going to wake up?
– Matthew, New Mexico, 04/08/2015

In response to these conditions, our interview respondents described adopting a variety of behavioral patterns they used to improve their sense of safety while sleeping – such as sleeping in shifts, sleeping lightly, and becoming conditioned to wake and respond quickly to a potential threat. Although theorizing the etiology of abnormal sleep after deployments is beyond the scope of this article, interview responses suggested that soldiers explained their difficulty sleeping as having originated from deployment experiences. Many explained that living and working amid frequent episodes of active shelling simply made sleep a harrowing proposal. A staff sergeant in the Hawai’i Army National Guard who had deployed to Iraq in 2009 attributed his sleep difficulties directly to the experience of nighttime mortar attacks.

Between 12 and 2 o’clock in the morning, you’re getting mortared three or four times and every time you get mortared, you got to get up and run to the bunker. It’s

pretty much like that continuously. I remember one night, it was cold outside and we all got our sleeping bags and jackets and stuff. We just all bunched up in the bunker and went to sleep. Sometimes we didn't even go to the bunker. A lot of us were just like, fuck it. Just whatever. If it's time to go [i.e. to die], it's time to go. I'd rather get my sleep or just do what we're doing. (Carl, Hawai'i, 1/21/15)

However, combat is also marked by routine and even boredom, and some of our respondents emphasized that the contrast between everyday situations and potential dangers could, in and of itself, amplify the stress that military workers experience. As a staff sergeant who had deployed to Iraq explained, the relative infrequency of combat paradoxically made non-combat periods more stressful, which he characterized as "365 days of being on high alert, knowing that every single minute of the hour you could die" (Steve, New Mexico, 4/8/15). Other respondents attributed their sleep difficulty to the occupational demands and environmental conditions associated with military service, such as the schedules of night watches and patrols. Finally, respondents also explained their sleep problems as having originated in sleeping situations that were physically uncomfortable. A medical equipment maintenance worker who served in Iraq in 2009, described the difficulty of adjusting to makeshift sleeping areas:

Initially, it was hard to sleep because we were in tents. It was hot. There is no AC. Sleeping in a tent is like a microwave in 120 degrees. So, sometimes it's hard to get sleep. After that, we got into fixed rooms. (...) [That's] like pretty much like a trailer. You know at construction sites they have those little trailers? Pretty much those all stacked up. It was dusty. Sometimes you couldn't sleep because your roommate snored. – Terrell, Hawai'i, 8/11/2015

“My Clocks Changed”: Sleep Problems after Deployment

Cody That's the one thing I have still, that I can't sleep.

Int What's that from?

Cody Probably deployment. I will stay up until 12 AM, 1 AM, maybe 2 AM.

Int Does that tie in with nightmares too or...?

Cody Sometimes. But a lot of times, just, I can't sleep. (Hawaii, 10/4/2014)

After returning from deployment, many respondents described their difficulty in returning to pre-deployment sleep patterns. These patterns were difficult for respondents to dis-establish after returning home. Respondents reported problems that much resembled the sleep disturbances that took place in combat zones, including difficulty falling asleep, wakefulness or broken sleep, unusual sleep schedules, sleepwalking and other activities while asleep, and nightmares. Overwhelmingly, respondents reported that the sleep patterns and behaviors they had acquired in deployment settings persisted after returning home, and also indicated that their sleep difficulties assumed a new character after deployment. For example, individuals who experienced symptoms of hyper-vigilance described feeling a need to guard their house against attack that they felt was imminent (even if they knew logically that was not the case). Some soldiers reported sleeping separately from their partners as a way of managing their anxiety. One respondent described sleeping in the living room “because I

wanted the house to be safe.” Another veteran found his bedroom at home too big to feel comfortable, so he slept in the closet that adjoined it.

These experiences were qualitatively distinct from sleep problems suffered in combat settings insofar as they haunted individuals in the formerly familiar surroundings of home. Many previously deployed soldiers described a paradoxical sense of danger when attempting to sleep in an objectively safe non-combat setting. Having become acclimated to a set of physical surroundings, routinized behaviors, and stimuli that cued and structured their sleep during deployment, returning veterans found that sleeping at home with their families felt unsafe.

This disjuncture, in some cases coupled with the lasting psychological trauma and distress precipitated by combat experiences, precluded restful continuous sleep, placed strain on intimate relationships, and underscored the difficult realization that some aspects of a psychologically strenuous deployment were not over. As one respondent stated, explaining the difficulty of getting to sleep after returning home: “You’re just always on guard. Noises you’re not familiar with, you just jump right out of bed and you’re fully alert” (Liam, New Mexico, 11/22/2014). As Felipe, an infantry squad leader who had deployed to the Middle East twice, explained: “...[C]oming home to a nice, quiet room where you’re not getting mortared any more, you don’t hear gunshots? – For a while there, it was just weird getting to sleep” (New Mexico, 9/12/14). Russell, who had served in two Iraqi deployments drew a connection between deployment sleep settings and sleep disturbance after returning home. Once accustomed to sleeping when and where the opportunity presented itself, he found it difficult to readjust to a typical sleep habitus: “My sleeping habits are different. ... if I find a comfortable spot on the concrete, I’ll sleep. (...) [B]ecause I’ve slept in vehicles and on the ground, my sleeping habits here are strange” (Russell, New Mexico, 9/11/2014).

Sleep difficulty constituted perhaps the most pervasive and publicly discussed marker of his transition from a combat zone to home. When asked if anyone commented on changes in his behavior after he returned from deployment, Carlos, a former transportation specialist who had deployed for a year in Iraq, replied:

My friends, my daughter. My daughter said, “You don’t go to bed very much, Dad, why are you up so late?” I just – I don’t know. My clocks changed. I work in the daytime but I can’t sleep at night. (Carlos, New Mexico, 11/20/2014)

Consequences of Sleep Disturbance

Our respondents described numerous emotional and health-related repercussions of extended periods without sleep, both during and after deployment. Many respondents elaborated on ways in which sleep disorders articulated negatively with interpersonal relationships, fueled excessive alcohol use and emotional disturbances, and made it difficult to occupy the work and family roles that they were attempting to re-inhabit. As Tyrone – a soldier who had served as a military policeman in Iraq – described, combat deployment reshaped his diurnal sleep cycle such that it ran counter to civilian social and work schedules.

I can go two or three days sometimes without sleeping and still function. But then when it hits me I’m out for a good 10–12 hours. (Tyrone, New Mexico, 9/11/14)

Some respondents also reported that family members found their changes in sleeping behavior distressing. One veteran described the marital friction that ensued from his need to sleep in a part of the house that felt reminiscent of his sleeping area in combat. Another respondent described his wife's frustration with his need to seal up the house every night before going to sleep. Posing serious concern for the welfare of a partner, not to mention the sustainability of an intimate relationship, five of our respondents described physically assaulting a girlfriend or wife while experiencing a nightmare or other sleep disturbance. One respondent grabbed his mother by the throat when she attempted to wake him. The following interview excerpts underscore the extremity of symptoms that some soldiers experience, as well as their distress and disorientation:

I've had issues coming out of my sleep, fighting or giving orders or hitting the floor. (...) My previous spouse, I hit her in my sleep a couple of times, not knowing who it was. (...) I've given her orders: "Get up! Move your team out." –Jeremy, New Mexico, 7/22/2014

For a long time, my wife had to sleep in another bed because I would have such violent nightmares that I would attack her. – Leo, New Mexico, 9/23/2015

Underscoring the fact that sleep for some combat veterans is a highly fraught event and provokes almost unbearable feelings of vulnerability, two respondents described sleeping with a gun under the pillow after returning from deployments.

Respondents' Methods for Managing Sleeplessness

Given the distress that sleep disturbances provoke and the challenges they pose to an individual's social and occupational function, men and women in our study who experienced sleep difficulty also took proactive measures to manage their sleep. Their efforts to correct problematic sleep were shaped by the pervasive stigmatization of any kind of psychological abnormality in military culture, and by the commonly shared belief that "[one's] body should be able to naturally handle itself" (Carl, Hawai'i, 1/21/15). As a result, a large portion of our sample pursued regimes of self-medication to improve their sleep, and bypassed consultations with medical or mental health professionals. By contrast, other individuals sought medical interventions for their sleep difficulties and accepted prescriptions for sleep aids. In our sample, the most common approaches included resisting medicalization (which entailed avoiding sleep medications), accepting medicalized interventions (including both prescription and over-the-counter sleeping aids), participating in sleep studies, and using alcohol to abet sleep. Less common approaches included fully de-medicalized interventions such as making adjustments to sleeping arrangements or schedule, watching television or playing video games, and exercising. Some individuals pursued multiple strategies, either serially or simultaneously, and their coping strategies can appear to pursue contradictory logics of what supports healthy sleep. For example, one individual described using Ambien, alcohol, music, exercise, and darkening his sleeping area at different times in his frustrated efforts at sleeping; another used both alcohol and melatonin; another described working out, "eating clean," and using NyQuil to manage his sleep at different points during and after deployment.

Of our subsample of 78 individuals reporting sleep problems, 23 (29%) made statements that expressed their resistance to or discomfort with medical treatment of sleep problems, such as “I refuse to take medicine if I don’t have to,” “I don’t want to be dependent on any drugs,” and “I don’t want to take Zoloft or whatever because I’m in the Guard to be a medic.” Such comments were often phrased in terms expressing strong moral objection to pharmacological solutions for sleep difficulties. Frequently occurring themes included the fear of chemical dependence on sleep medications and the unpleasant and sometimes stigmatized side effects associated with drugs such as Ambien (zolpidem tartrate). One respondent’s comments underscored the perception, common in our study population, that sleep aids both interfere with an individual’s ability to plan spontaneously and may impair one’s capacity to respond – and that therefore, they are unsafe and stigmatizing for military personnel.

I try to avoid the pills because you have to take them hours before you go to sleep. And I don’t want to take the pills at two o’clock in the morning because at six o’clock, I’m not going to wake up. I took the pills a couple of times. Those pills are dangerous. – Alejandro, Hawai’i, 8/12/15

However, some individuals also managed to make compromises with their opposition to the process of seeking and receiving a prescription to a pharmaceutical sleep aid. Of these 23 respondents, five endorsed using melatonin, a substance that is perceived as a natural sleep aid and is available over-the-counter; of these, one reported using “melatonin or Tylenol PM” to get to sleep, and one endorsed using the herbal products valerian, kava kava, and melatonin. Three endorsed using over-the-counter cold medicine, and one endorsed using smokeless tobacco to get to sleep. One described using coffee to stay awake (though given other research findings regarding the high prevalence of coffee and energy drink consumption among deployed military personnel [c.f. Adler et al. 2011, Bonnet et al. 2005, Toblin et al. 2012, Troxel et al. 2015], it is probable that many of our respondents used caffeinated products to combat fatigue). These nine respondents described these non-prescription products as less aversive, less risky, and more acceptable than using prescription sleep aids.

The next most common strategy for sleep was receiving a prescription for a sleep aid, which eighteen individuals (23%) reported. Of these, one described using alcohol in conjunction with Ambien, and one described purchasing over-the-counter sleep aids after his prescription ran out. Another individual described using someone else’s prescription sleeping medication. Notably, many of the interview excerpts that describe securing a prescription and using a sleep aid are marked by trepidation about complications and a sense of stigma associated with pharmaceutical solutions to mental health problems. A pilot’s anecdote about switching from a disallowed sleep drug to a permitted one underscored this complexity and discomfort:

Int Some people have side effects from sleep medications. What was your experience?

David I was kind of scared about that, [but] (...) I had to take it, so I didn’t take it as much. Luckily, I didn’t get any of those bad side effects I read about (...). I was on the replacement for Ambien before I left. It was trazodone. But then I couldn’t

take trazodone because I was flying again, so they gave me Ambien. The sad part is, I read the side effects and was like, “This is worse.” (Hawaii, 1/11/2014)

In general, although some respondents reported satisfaction with prescription medication, many described ambivalence and reluctance about requesting a sleep aid, or expressed frustration with the effects of the drug itself. One described becoming dependent on a sleep medication.

The third most prevalent approach to managing difficulties with sleep was using alcohol. Of our respondents with reported sleep problems, 16 (21%) endorsed alcohol use as a means they used to get to sleep, with some noting their frequent and heavy use of alcohol. These respondents confirmed an association in the literature between difficulty sleeping and excessive drinking to facilitate sleep (Seelig et al. 2010), explaining that they used alcohol in a variety of settings and circumstances to manage disturbed sleep/wake rhythms as well as intrusive memories and nightmares. Individuals frequently described these patterns as being particularly severe immediately following a deployment.

When I first came back and was first trying to figure out this thing, I was a heavy drinker. I was trying to use that to combat my inability to sleep, figuring, “Hey, I’ll just get drunk, forget about all this trouble, and pass out and sleep.” – Leo, New Mexico, 9/23/2015

Individuals spoke relatively freely about the types and amounts of alcohol they used to abet sleep. For example, one respondent described himself as a former “super hard core alcoholic,” directly connecting his quantity and frequency of alcohol consumption to his sleep disturbances after deployment.

I used to drink seven beers, six beers a night. On top of the liquor I was drinking, I would drink a beer and take a shot. I would do it that way. I would take two or three shots back-to-back. (...) That helps out a lot of people with sleeping at that time. You think that if you drink enough you get drunk and you pass out. – Jamie, New Mexico, 9/21/2015

Respondents also emphasized the utility of alcohol in forestalling unwanted psychological experiences, the social acceptability of alcohol use, and the compatibility of alcohol with military work rhythms.

If you’re playing [drinking] games with all your buddies, [it feels like] “Well, nothing’s wrong with you. You’re just having fun drinking with people.” But then, I noticed it started to get a little more serious for me, and I get nightmares. Say, I go to sleep at 10:00. I’d jump up at 2:00, just crying my heart out. And then I don’t want to sleep anymore. (...) That becomes your life, where you’re afraid to sleep.

Sad to say, but alcohol helped it. Drinking knocks me out (...). If I just keep drinking, I’ll pass out, I’ll wake up, and then we’ll go to PT [physical training]. – Greg, Hawaii, 6/6/2014

Less frequently reported strategies and behaviors for managing sleep disturbance included sleep study participation, which six individuals (8%) mentioned. Reflecting the limited resources available to support veterans, some individuals mentioned the difficulty of

securing consultations with specialists in sleep disorders. Five individuals (6%) described exercising, including to the point of exhaustion, in order to get to sleep. Four individuals (5%) reported adjusting their sleeping arrangements or schedule. Two individuals (3%) mentioned watching television to fall asleep and two individuals mentioned playing video games to get to sleep or instead of sleeping. One individual (1%) mentioned reading to fall asleep.

Discussion

Int So what is it about military work and sleep that do not go together?

Scott I'm not sure. I wish I could find the answer to that, because I think I would get promoted. (New Mexico, 4/8/2015)

Military employment, especially in combat environments, is inimical to healthy sleep patterns. Because sleep is a physiological function that lies at the core of personhood, supporting both psychological and physical wellness, sleep disturbances imply potentially serious and long-term consequences. Among military personnel, sleep disturbance has been found to predict other serious mental health problems (McLay et al. 2010, Koffel et al. 2013), including particularly risk for depression and post-traumatic stress disorder. The highly prevalent problem of sleep impairment among military personnel therefore requires evidence-based interventions to improve this population's health and quality of life.

However, owing to the stigma and potential occupational consequences of mental health diagnoses in the military, personnel with sleep difficulties experience discomfort seeking formal help and feel ambivalence about using prescription drugs. As a result, many individuals in our study reported using self-administered substances and behaviors as methods of managing their sleep-related symptoms, including especially heavy episodic alcohol use. Our study suggested that these idiosyncratic approaches to managing sleep problems sometimes allow individuals to remain relatively high-functioning. This may mean that individuals legitimately experience wellness and satisfaction with their ability to sleep. Other individuals may have found work-arounds that allows them to continue to fulfill their work obligations despite dysfunctional and unhealthy behaviors. Exemplifying the latter problematic orientation, one respondent – who described experiencing pervasive symptoms of anxiety, obsessive-compulsive behaviors, and sleep problems – stated his rationale for declining to seek mental health services:

I don't sleep very good, that's for sure. (...) I've got a Band-Aid on it now, basically. (...) At this point, I'm 15 years in on my career, and I want to get my 20 [in order to qualify for National Guard retirement benefits]. If I go in and I've got sleep problems, and PTSD, and this, and that (...) I may not be able to finish up my time. If they think I'm a drunk, alcoholic, binge-drinker, anxiety, sleep problems, these are all things that may not allow me to finish my career (...) whereas if you look at my performance evaluations, I'm very capable. So I cope with it. – Scott, New Mexico, 4/8/2015

This quote suggests the potentially serious consequences of an undiagnosed, unreported difficulty with sleep – and it also indicates the potential benefits that could be achieved from

interventions that are responsive to the occupational and cultural preferences of military personnel.

Conclusion

The complexity of these various pathways towards better-quality sleep among sleep-disturbed soldiers is a relatively underdeveloped research area. This article represents a first step in documenting the various methods that military personnel use to access better sleep, and in describing the forces that contribute to shaping their choices. We note that our study is limited by its relatively small sample size, and that a larger study could provide improved generalizability and statistical power, such as one in which gender differences could be better distinguished, as Foster and colleagues found in a recent clinical study of soldiers with disordered sleep patterns seeking treatment (Foster et al. 2017). We also note that had our interview instrument initially included items about sleep patterns and sleep disturbance, we would have a larger data set from which to generalize. Although we hope that other researchers will gather quantitative data on sleep-seeking in military populations, we also encourage further qualitative research on this subject, including ethnographic research. Even in a small sample, we discovered considerable variation in approaches to managing sleep problems – and that a number of individuals used sometimes incompatible-seeming techniques, both serially and simultaneously, in their desperate efforts to get a good night's sleep.

Focus box:

Carl (*pseudonym*), a sergeant in the Hawaii Army National Guard in his mid-twenties, described his deployment to Iraq as having “started off kind of rough.” He was barely twenty when he deployed in 2009 to join the U.S. Army’s Operation Iraqi Freedom. Although the civilian death toll was dropping and some months were quiet, suicide bombings were not infrequent; U.S. combat troops would not withdraw for another year. Carl’s military occupational specialty concerned advanced weaponry; his daily routine entailed nearly constant traveling in convoys, starting early in the morning. Despite the stress of watching out for roadside improvised explosive devices (IEDs) and the constant threat of incoming fire, he had enjoyed the work, he explained. However, he never really got to sleep very much:

I have a high energy level. I like to sing, dance, and everybody I picked to be in my truck had the same kind of energy level as me. (...) We wanted to keep it light. We’d get up and have to be at the trucks around 4:30 in the morning so we could leave out by 5:30. Then we didn’t get in until about 5 or 6, sometimes later, at night. Then on top of that, you got to do shutdown procedures. Then you still got to go to the gym and work out. By the time you get in the bed, it’s probably 10 o’clock and you get a few hours of sleep.

The military police station where Carl was based – an Iraqi building that U.S. forces had requisitioned – was a frequent target for gunfire and mortar shells, making those few hours of sleep both uncomfortable and dangerous. The timing of assaults was unpredictable, making quiet moments almost as stressful as firefights, Carl said: “Sometimes they’d just hit

you once a night. Sometimes they'll skip a night." One week, there were no mortars at all. Another day, the platoon "got mortared 20-something times back to back to back." Like everyone in his platoon, Carl developed a finely tuned awareness of the sounds that incoming rockets and mortars make, and listening carefully to determine their direction became second nature.

If [they're] just [like] *shooo* – if you hear that, you know it's not going to hit you, because it went over your head. So, the whole time you're praying to hear that sound (...). You're just hearing [bombing sounds] and you're like: Okay, that's one, that's two. Okay, that is missing us.

Post-deployment, insomnia followed Carl back to the United States. He described managing his sleeplessness by going out with friends to drink.

Carl I had just got back. I wasn't a big partier or drinker before. (...) Then once I got back, honestly I can't sleep, so I need to do something to go to bed. (...) We used to go in Waikiki, party all night long, drink. We didn't care what we were drinking. (...) We'd drive back (...) [and] just change into PT [physical training; exercise] clothes and go do PT.

Int So, no sleep at all?

Carl Oh, no, no, no. Why? Sleep for what? So then we'd come back and after – because we're all [working] half days, we'd work half the day and then go home, sleep for a couple hours, wake up around 8 or 9, get up. Everybody meets to go eat dinner, go downtown and go do the same thing over. (...) It was mainly because, like I said, I couldn't sleep at night.

In addition to sleep problems and heavy drinking, Carl started noticing episodes of anger and dissociation: "I [would] flip out for no reason, and I didn't realize I flipped out until afterwards." He had never had similar experiences before, but he couldn't trace his anger to anything that had happened during his year in Iraq. As he explained, "I had a fairly good deployment compared to other people. None of my friends died. I honestly don't know. It just happened."

When we interviewed Carl, his deployment was five years in the past. He was earning a college degree and hoped to become an officer. However, the pattern of hyperarousal, sensitivity to noise, and intermittent sleeplessness that he had established in Iraq still persisted. As he said, "The whole getting mortared thing – to this day, I cannot sleep through a full night." Carl used a commercial wrist actigraph to monitor his sleep, which confirmed to him that he was sleeping badly. However, he resisted the idea of using medications to treat his sleep problems.

I just got this thing called the Flex, and it actually tracks my sleep. Two nights ago, I only got 39 minutes of sleep. (...) Last night, I think I got two hours of sleep. (...) It lets me know I was awake this many times, restless this many times. Last night, I think I was restless 162 times. The night before, it was 272. (...) I never really sleep. (...) The only thing I can probably think of is maybe doing some kind of sleeping pills or something. I really hate taking any kind of medicines or drugs

because I feel like my body should be able to naturally handle itself. I'm afraid of side effects; I'd rather not do it at all.

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Table 1

Participant characteristics

Gender/Race/Ethnicity	Survey Freq	Survey %	Interview Freq	Interview %
Male	850	91.6	87	86.1
Female	78	8.1	14	13.9
African American	24	2.6	9	8.9
American Indian/AN	79	8.5	12	11.9
Asian American	191	20.6	16	15.8
Native HI/Pacific Islander	83	8.9	7	6.9
Caucasian	216	23.3	19	18.8
Multiple Ethnicity	96	10.3	8	7.9
Latino	223	24.0	29	28.7
No response/decline	16	1.7	1	1.0
Total	928	100	101	100

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Table 2.

Tours of duty and duration

Tours	SURVEY SCREENER SAMPLE		INTERVIEW SAMPLE	
	Survey: #(%) of 928	Duration in months range (M, SD)	Interview, # (%) of 101	Duration in months range (M, SD)
in Iraq	546 (59%)	1–43 (M=14.6, SD=7.0)	73 (73%)	1–30 (M=14.7, SD=7.0)
in Afghanistan	229 (25%)	1–28 (M=11.1, SD=4.1)	26 (26%)	6–24 (M=10.8, SD=4.1)
elsewhere in the Middle East	290 (31%)	1–36 (M=11.1, SD=5.0)	33 (33%)	3–36 (M=11.1, SD=5.0)
in other settings abroad (e.g., Pakistan, Somalia)	206 (22%)	1–36 (M=10.2, SD=5.0)	24 (24%)	1–24 (M=10.0, SD=5.2)

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