

Identifying Sleep as a Health Need in Student Veterans

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Received: May 24, 2019; **Published:** June 14, 2019

Abstract

Background: Military veterans are a unique population comprising many service-acquired health-related issues placing them at high risk for sleep disorders and disturbances. There is an escalating influx of military veterans to higher education. However, little is known about this population of student veterans and sleep specifically within the context of higher education.

Purpose: The purpose of this study was to investigate the presence and characteristics of self-reported sleep complaints in student veterans attending a large, doctoral degree-granting public institution of higher education in the United States.

Methods: An electronic online needs assessment survey was administered during the fall semester of three separate, non-consecutive academic years.

Results: Student veterans self-reported unmet sleep needs, inadequate sleep duration, difficulty initiating and maintaining sleep, and consequential daytime complaints affecting their school work with continuity. Student veterans also expressed interest in campus-based sleep services.

Conclusion: Findings may suggest the manifestation of insomnia in student veterans at rates higher than those found in military veteran populations.

Recommendations: Further research is needed to obtain a more thorough understanding of student veterans and sleep within the context of higher education so as to contribute and enable the development and implementation of unique veteran-friendly programs, policies, and services which may convey the propensity to foster student veteran matriculation, retention, and academic success. This may be best achieved through an interdisciplinary approach. Comparative studies incorporating non-veteran college students are also recommended.

Keywords: Student Veterans; Military Veterans; Sleep; Health; Needs Assessment; Higher Education; Academic Success

Abbreviations

HE: Higher Education; IHE: Institutions of Higher Education; PTSD: Post-Traumatic Stress Disorder; VAC: Veteran's Advisory Council.

Introduction

The violent acts of terrorism that transpired on September 11th, 2001 inadvertently thrust our nation into what will soon be the longest military conflict in its history. Now spanning nearly two generations in duration, the United States' involvement in the Global War on

Terrorism perseveres. Naturally, throughout this prolonged period, many of our nation's armed forces personnel have completed their enlistment obligations and transitioned back into the civilian population as military veterans. Following the introduction of the generous veteran's education benefit package known as the Post-9/11 GI Bill nearly a decade ago, there has been an escalating influx of military veterans who have made an additional transition to institutions of higher education (IHE) as student veterans [1,2]. These student veterans bring many service-acquired health-related challenges with them to IHE.

Military veterans are a unique population that is recognized as comprising several service-acquired health-related issues including mild traumatic brain injury, chronic pain, anxiety, depression, alcohol abuse, and mental health disorders such as post-traumatic stress disorder (PTSD) which place them at higher risk for sleep disorders and disturbances [3-8]. Most commonly found within this population are PTSD and insomnia. PTSD has been found in up to 31% of Post-9/11 era military veterans and is often characterized by a state of hyperarousal [7]. Nighttime sleep disturbances are the most salient conveyed sleep complaint in PTSD, having been reported in as many as 90% of cases [9]. These disturbances can include nightmares which in turn lead to disrupted sleep, daytime complaints, and the subsequent exacerbation of PTSD symptoms [9,10]. More conservative accounts of sleep disturbances in military veterans, such as insomnia, have been conveyed in the 20 - 40% range [10-12]. Insomnia is characterized by difficulty falling asleep, staying asleep, and perhaps most prominently, a perceived negative impact upon daytime function [13-15].

For student veterans seeking success in higher education (HE), the ability to function at superlative levels during daytime hours is essential, as the bulk of college classes are held during this timeframe. The poor nighttime sleep resulting from sleep disorders and disturbances carries the propensity to convey a number of deleterious consequences across several domains, including daytime sleepiness, fatigue, mood disturbance, irritability, concentration, attention, memory, motivation, and social/vocational dysfunction [13,16-19]. Such consequences can prove exceptionally problematic to college students and may result in compromised learning and lower grade point averages [20,21]. Evidence suggests that students with sleep disorders and disturbances likely do not achieve superlative academic performance and are at higher risk of academic failure [21,22].

Despite bringing many service-acquired health-related issues, student veterans also bring several positive aspects to college campuses. Student veterans share comparable aspirations of academic success with their non-veteran student peers and the IHE themselves; however, they are unique in comparison to the general student population, and bring a wealth of perspective and deep personal experience with innovation, accountability, and responsibility which affords unique scenarios for the enrichment of classroom discussions and campus diversity [23-25]. Student veterans also bring U.S. Department of Veterans Affairs education benefits and are projected to have disbursed over \$12 billion to IHE during the 2018 fiscal year, representing a trend that is projected to increase in the future [26]. Consequent to these synergistic benefits, many IHE's are fervent and benevolent toward promoting their matriculation, retention, and success in HE [27]. Following the commencement of the Global War on Terrorism, there has been a strong increase in support of student veterans, however, there remains a clamor for IHE to be more responsive and provide campus-based support services with intents of fostering their academic success [25,28-31].

The prospect of success in HE holds vast potential to student veterans who have risked their lives serving our country and may even serve as a measure of successful transition to civilian life, accomplishment in their host communities, and an enhanced quality of life [25,28]. However, IHE are generally unprepared to meet the needs of this unique population on college campuses [23,25,32,33]. This represents a formidable postulation considering that as many as 30 - 40% of student veterans do not complete their academic certificates or degrees [34]. IHE's must be responsive to the needs of its students, especially those students who have served this country, however, meeting the needs of student veterans isn't easy. The ability to provide them with the support and services they need to succeed takes time and determination in order to raise awareness among IHE faculty and staff to the varied issues that student veterans face [23,25,32].

For many IHE, providing services is not a simple process. The internal organizational shifts that are required to formulate and begin providing services aren't easy to initiate, and often call for major motivation and transformation to bridge the gap between where they currently are within this process, and where they would like to be in the future. A needs assessment can help bridge this gap, by revealing information which IHE can use to improve the performance of itself, and of the individuals in which it serves [35,36]. Inquiry efforts should be initiated with an aim to collect first-hand data from this population to identify and clarify issues which might affect student veteran matriculation, retention, and certificate or degree attainment.

Despite military veterans being a population recognized as comprising many service-acquired health-related issues that place them at high risk for sleep disorders and disturbances, there is a lack of information directly pertaining to student veterans and sleep within the context of HE. We do not know the extent to which sleep disorders and disturbances exist and impact the student veteran population, or

the sleep needs in this growing portion of American HE. The purpose of this project was to investigate the presence and characteristics of self-reported sleep complaints in student veterans attending a large, doctoral degree-granting public institution of higher education in the United States situated near multiple large military bases. It was undertaken to obtain a more thorough understanding of student veterans and sleep so as to contribute and enable the development and implementation of unique veteran-friendly programs, policies, and services which may convey the propensity to foster student veteran matriculation, retention, and successful completion of their university certificates and degrees.

Methods

This study was approved by exemption through the university Institutional Review Board. All subjects in this study were advised that participation was voluntary, confidential, and could be stopped at any time.

Research design

This study used an exploratory, descriptive design employing an electronic online needs assessment survey administered during the fall semester of three separate, non-consecutive academic years.

Population

Criteria for subject participation in this study were met through identification as a student veteran. For the purposes of inclusion into this study, the term “student veteran” represented all individuals who were currently enrolled in the university and had previously served in, or were currently serving in, any of the five branches of the United States military, including the Reserves and National Guard, and were discharged or released under conditions other than dishonorable. Identification was established through the participant’s utilization of U.S. Department of Veterans Affairs education benefits. This information was provided to the research team in the form of email addresses by the institution’s Office of Veterans Affairs.

Instrument

In late 2008, the research team collaborated under the guidance of a Veteran’s Advisory Council (VAC) to develop and pilot an electronic student veteran-specific needs assessment survey. The VAC consisted of an interdisciplinary team of faculty and staff within the university who had interest in combining their efforts and resources to provide advice and support to facilitate the smooth transition of military veterans to college, and to promote their academic success. The resultant final instrument originally consisted of 56 open and closed-ended questions. In addition to the collection of demographic information, it was designed to collect information along six domains, including: adjustment/transition, educational, financial, career/employment, support services, and health needs of student veterans. This report focuses on describing the sleep-related findings from the health needs and support services domains.

The sleep-related questions were specifically designed to obtain the most fundamental level of self-report information pertaining to the presence of, and need for, sleep-related problems and support services, respectively. During the initial survey administration, the questions consisted of one closed-ended sleep-related question, and one closed-ended sleep-related support service question. Questions were later amended for incorporation into subsequent surveys as the presence and necessity grew evident. Amended questions included further-focused closed-ended questions concerning sleep initiation, maintenance, duration, difficulty, and the inclusion of open-ended questions pertaining to academic consequences resultant of changes in sleep patterns.

Data collection

The instrument was hosted online using Qualtrics® and was administered during the fall semester of three separate, non-consecutive academic years: 2010, 2013, and 2015. For each administration, an invitation was sent out electronically using the university Office of Veterans Affairs email distribution list. The email invitation contained a cover letter explaining the confidentiality, purpose and importance of the survey, as well as information declaring that the research study had been approved by the university Institutional Review Board. For each administration year, the survey remained open to participants for a data collection period of twenty-one days. To promote participation both before and during the survey launch, the research team decided that active outreach to the desired population was vital. An assortment of recruitment activities were used to engage student veterans, including: advertising the survey two weeks prior to its administration with an information booth and free lunch in a busy outdoor campus corridor, email reminders from the Veterans Affairs office, a second information event in an outdoor campus location after the opening of the survey which included laptops on which student veterans could complete the online survey, social media and campus student veterans organization website announcements, reminders at luncheons for student veterans, and articles in the university newspaper.

Data analysis

Resultant collected data was entered into the statistical software SPSS® Version 25 and descriptive statistics were produced to determine frequency and percentages for responses to closed-ended survey questions. Responses to open-ended survey questions were transcribed and collated from individual survey responses into recurring themes and reported by frequency.

Results

2010 administration

For the initial survey administration, there were 1,252 student veterans enrolled in the university, with 339 participating, for an overall response rate of 27%. Table 1 lists the demographic profile of participants.

Item	Participant Responses	
	Frequency	(Percent)
Ethnicity		
Caucasian	205	(60.5)
Hispanic	77	(22.7)
African American	20	(5.9)
Other	12	(3.8)
Age		
18 - 23 years	28	(8.6)
24 - 29 years	125	(36.8)
30+ years	186	(54.6)
Relationship Status		
Single, never married	126	(37.2)
Married	129	(38.1)
Living with partner	34	(10)
Divorced	40	(11.8)
Separated	6	(1.8)
Other	1	(.3)
Number of Children		
0	192	(56.6)
1	42	(12.4)
2	53	(15.6)
3	17	(5)
4+	22	(6.5)
Work Status		
Not working	117	(34.5)
< 20 hours per week	47	(13.9)
20 - 30 hours per week	53	(15.6)
31 - 40 hours per week	42	(12.4)
> 40 hours per week	59	(17.4)
Academic Status		
Freshman	21	(6.2)
Sophomore	37	(10.9)
Junior	82	(24.2)
Senior	117	(34.5)
Graduate student	67	(19.8)
Military Service Branch		
Air Force	65	(19.2)
Army	138	(40.7)
Coast Guard	5	(1.5)
Marine Corps	58	(17.1)
Navy	60	(17.7)
National Guard/Reserves	73	(21.5)

Table 1: 2010 demographic profile of participants.

Note: Missing responses not reported.

Results from the closed-ended sleep-related question of the health needs domain are listed in table 2. Responses were essentially divided amongst participants, with 40% responding that they had unmet sleep needs or trouble sleeping, and nearly 60% responding that they did not have unmet sleep needs or trouble sleeping.

Item	Participant Responses	
	Frequency	(Percent)
Do you have unmet sleep needs or trouble sleeping?		
Yes	136	(40.1)
No	199	(58.7)

Table 2: Responses to 2010 sleep-related question.
 Note: Missing responses not reported.

Results from the closed-ended sleep-related question of the support services domain are listed in table 3. When participants were asked about their likeliness of utilizing campus-based sleep clinic support services that both diagnose and treat sleep issues, half seemed interested and half uninterested.

Item	Participant Responses	
	Frequency	(Percent)
Likelihood of using campus-based sleep clinic services that diagnose and treat sleep issues		
Not likely	168	49.5
Somewhat likely	77	22.7
Likely	88	26

Table 3: Responses to 2010 sleep-related support services question.
 Note: Missing responses not reported.

2013 administration

For the second survey administration, there were 1,254 student veterans enrolled in the university, with 300 participating, for an overall response rate of 24%. Table 4 lists the demographic profile of participants.

Item	Participant Responses	
	Frequency	(Percent)
Ethnicity (more than one possible)		
Caucasian	205	(68.3)
Hispanic	73	(24.3)
African American	17	(5.7)
Other	29	(9.7)
Age		
18-23 years	16	(5.3)
24-31 years	141	(47)
32+ years	140	(46.6)
Gender		
Male	226	(75.3)
Female	72	(24)
Relationship Status		
Single	79	(26.3)
In a relationship	56	(18.7)
Married	129	(43)
Divorced	33	(11)
Widowed/Widower	1	(.3)
Number of Children in Household		
0	209	(69.7)
1	39	(13)
2	31	(10.3)
3+	18	(6)
Work Status		
Not working	107	(35.7)
< 20 hours per week	54	(18)
21 - 30 hours per week	39	(13)
31 - 40 hours per week	23	(7.7)

> 40+ hours per week	40	(13.3)
Education Level Pursuing		
Undergraduate	228	(76)
Graduate	61	(20.3)
Doctoral	7	(2.3)
Military Service Branch		
Air Force	58	(19.3)
Army	126	(42)
Coast Guard	3	(1)
Marine Corps	58	(19.3)
Navy	45	(15)
National Guard/Reserves	29	(7)
Time between military discharge and enrollment at this university		
0 - 2 months	52	(17.3)
3 - 5 months	32	(10.7)
6 - 8 months	13	(4.3)
9 - 11 months	12	(4)
12 + months	166	(55.3)

Table 4: 2013 demographic profile of participants.

Note: Missing responses not reported.

Responses to the closed-ended sleep related questions from the health needs domain are listed in table 5. Only 25% of participants responded that they obtained at least 7 hours of sleep on average each night. Half of the participants responded that they had trouble falling asleep. This number represented a greater proportion than the number of participants who responded that they did not have trouble falling asleep. There was a greater number of participants who responded that they had difficulty staying asleep than the number of participants who responded that they did not have difficulty staying asleep. Additionally, more than half of participants responded that they had experienced changes in their sleep patterns, with over one third of those participants further responding that it had affected their school work.

Item	Participant Responses	
	Frequency	(Percent)
On average, how many hours of sleep do you get each night?		
< 3	4	(1.3)
3 - 4	59	(19.7)
5 - 6	137	(45.7)
7 - 8	66	(22)
8+	9	(3)
Do you have difficulty falling asleep?		
Yes	147	(49)
No	128	(42.7)
Do you have difficulty staying asleep?		
Yes	151	(50.3)
No	125	(41.7)
Have you experienced changes in your sleep patterns?		
Yes	160	(53.3)
No	114	(38)
If yes, have these changes affected your school work?		
Yes	106	(35.3)
No	89	(29.7)
N/A, I have not experienced changes	77	(25.7)

Table 5: Responses to 2013 sleep-related questions.

Note: Missing responses not reported.

As a follow-on question for those participants who responded to the preceding closed-ended question that changes in their sleep patterns had affected their school work, an additional opportunity to provide free-text, manual entry responses to specify how was provided. A total of 40 participants provided responses. Individual responses were categorized into recurring themes. Table 6 lists the themed responses by frequency, including an illustrative quote representative of anonymous participant responses used toward theme inclusion. Several responses included more than one theme. The most salient themes were those concerning concentration or focus (20) and daytime sleepiness (20). This was followed by themes concerning attendance (6), sleep schedule (5), insufficient sleep (3) and poor sleep quality (3).

Item	Participant Responses
	Frequency
If changes in your sleep patterns have affected your school work, please specify how	
Recurring Themes	
Attendance	6
"I'm unable to wake up in time to make it to class".	
Concentration/Focus	20
"I find it difficult to stay focused and concentrate".	
Daytime Sleepiness	20
"Falling asleep in classes".	
Sleep Duration	3
"I don't feel that I receive enough sleep for the coming day".	
Poor Sleep Quality	3
"I don't get good sleep so I'm tired and less attentive".	
Sleep Schedule	5
"I have irregular sleep patterns that have an effect on my schooling in terms of waking up on time".	
Unspecified/Other	2
"I sleep more than ever. I love it".	

Table 6: Themed responses to 2013 open-ended sleep-related academic consequences question.

Table 7 lists participant responses to the closed-ended sleep-related services question. This question was amended from the initial survey administration to inquire concerning utilization of currently available campus-based sleep clinic services. Only three participants responded that they had utilized campus-based sleep clinic support services, while all of the other participants responded as never having utilized such services.

Item	Participant Responses	
	Frequency	(Percent)
Have you used campus-based sleep clinic services?		
Yes	3	(1)
No	297	(99)

Table 7: Closed-ended 2013 sleep-related support services question.

2015 administration

For the third and final survey administration, there were 1,166 student veterans enrolled in the university, with 231 participating, for an overall response rate of 20%. Table 8 lists the demographic profile of participants.

Item	Participant Responses	
	Frequency	(Percent)
Ethnicity (more than one possible)		
Caucasian	127	(55)
Hispanic	55	(23.8)
African American	22	(9.5)
Other	21	(9.1)
Age		
18-23 years	11	(4.7)
24-31 years	95	(41.1)
32+ years	123	(53.3)
Gender		
Male	173	(74.9)
Female	55	(23.8)
Relationship Status		
Single	63	(27.3)
In a relationship	43	(18.6)
Married	107	(46.3)
Divorced	15	(6.5)
Number of Dependent Children		
1	34	(14.7)
2	33	(14.3)
3+	10	(4.3)
Work Status		
Not working	83	(35.9)
< 20 hours per week	44	(19.1)
21 - 30 hours per week	20	(8.7)
31 - 40 hours per week	25	(10.8)
> 40+ hours per week	35	(15.2)

Education Level Pursuing		
Undergraduate	154	(66.7)
Graduate	53	(22.9)
Doctoral	8	(3.5)
Military Service Branch		
Air Force	38	(16.5)
Army	102	(44.2)
Coast Guard	3	(1.3)
Marine Corps	30	(13)
Navy	36	(15.6)
Service Capacity (more than one possible)		
Active Duty	186	(80.5)
National Guard	21	(9.1)
Reserves	35	(15.2)
Time between military discharge and enrollment at this university		
0 - 2 months	30	(13)
3 - 5 months	10	(4.3)
6 - 8 months	15	(6.5)
9 - 11 months	7	(3)
12 + months	103	(44.6)

Table 8: 2015 demographic profile of participants.

Note: Missing responses not reported.

Results from the closed-ended sleep-related questions of the health needs domain are listed in table 9. Only 26% of participants responded that they obtained at least 7 hours of sleep on average each night. When participants were asked if they had experienced changes in their sleep patterns since leaving the service, 55% responded yes, with 25% selecting that they had difficulty falling asleep, and 30% selecting that they had difficulty staying asleep. 17% of those participants further responded that they had these difficulties some nights, 12% responded most nights, and 8% responded every night. Only 24% of participants responded that they had not experienced changes in their sleep patterns. For respondents reporting changes in their sleep pattern, 32% believe their school work had been negatively impacted.

Item	Participant Responses	
	Frequency	(Percent)
On average, how many hours of sleep do you get each night?		
< 3	4	(1.7)
3 - 4	26	(11.3)
5 - 6	89	(38.5)
7 - 8	58	(25.1)
8+	3	(1.3)
Have you experienced changes in your sleep patterns since leaving the service?		
(select all that apply)		
Yes, I have difficulty falling asleep	57	(24.7)
Yes, I have difficulty staying asleep	70	(30.3)
Some nights	40	(17.3)
Most nights	29	(12.6)
Every night	18	(7.8)
N/A, I have not experienced changes in sleep patterns	55	(23.8)
Have these changes affected your school work?		
Yes	74	(32)
No	61	(26.4)
N/A, I have not experienced changes	37	(16)

Table 9: Responses to 2015 sleep-related questions.

Note: Missing responses not reported.

As a follow-on question for those participants who responded to the preceding closed-ended question that changes in their sleep patterns have affected their school work, an additional opportunity to provide free-text, manual entry responses to specify how was provided. A total of 42 participants provided responses. Individual responses were categorized into recurring themes. Table 10 lists the themed responses by frequency, including an illustrative quote representative of anonymous participant responses used toward theme inclusion. Several responses included more than one theme. The most salient themes were those concerning concentration or focus (23) and daytime sleepiness (16). This was followed by themes concerning insufficient sleep (6), poor sleep quality (5), attendance (2), and sleep schedule (2).

Item	Participant Responses
	Frequency
If changes in your sleep patterns have affected your school work, please specify how	
Recurring Themes	
Attendance	2
“Hard to wake up and go to class after being up all night”.	
Concentration/Focus	23
“There is noticeable cognitive decline from lack of sleep”.	
Daytime Sleepiness	16
“I’m constantly tired, and I can’t fall asleep for hours.”	
Sleep Duration	6
“Being tired from loss of sleep affects my focus and attention span in class”.	
Poor Sleep Quality	5
“Some nights I have bad dreams, can’t go back to sleep afterwards and then sleepy”.	
Sleep Schedule	2
“My anxiety and poor sleep cycle literally effected 1/4 of my semester grade”.	
Unspecified/Other	2
“I have to say yes, but I cannot state a specific incident. General cases though are many”.	

Table 10: Themed responses to 2015 open-ended sleep-related academic consequences question.

Participant responses to the closed-ended sleep-related support services questions are listed in table 11. These questions were further amended from the second survey administration to inquire regarding the familiarity, utilization, and desire for campus-based sleep clinic support services. Participant response rate to these questions was exceptionally minimal. Only 8 participants responded that they were familiar with current campus-based sleep clinic support services, and only a single participant had utilized such services. However, 30 participants responded that they desired campus-based resources that both diagnose and treat sleep issues.

Item	Participant Responses	
	Frequency	(Percent)
Are you familiar with campus-based sleep clinic support services?		
Yes	8	(3.5)
Have you utilized campus-based sleep clinic support services?		
Yes	1	(.4)
Would you like campus-based sleep clinic resources that diagnose and treat sleep issues?		
Yes	30	(13)

Table 11: Closed-ended 2015 sleep-related support services questions.
 Note: Missing responses not reported.

Discussion

2010

Sleep-related questions included in the initial survey were specifically designed to obtain the most fundamental level of self-report information pertaining to the presence of, and need for, sleep-related problems and support services, respectively. The survey consisted of one closed-ended sleep-related question, and one closed-ended sleep-related support service question.

Results revealed that nearly half (40.1%) of student veterans reported unmet sleep needs or trouble sleeping. Although formidably high, the nature of this question with regards to its fundamental design unfortunately does not provide any further detailed sleep-specific information. It does, however, identify both the presence of, and need for, sleep-related problems and support services obligatory for the initial survey administration. Half (48.7%) of student veterans revealed interest utilizing campus-based sleep clinic support services that both diagnose and treat sleep issues. This is an encouraging finding for IHE and provides valuable direction regarding the conception of student veteran-specific support services, and the feasibility of provision.

2013

Previous sleep-related questions were amended for inclusion into the subsequent survey administration. This was done to build upon and improve the fundamental nature of the initial inquiry to be less ambiguous and provide further detailed information regarding sleep-related problems and characteristics including sleep duration, sleep initiation, sleep maintenance, changes in sleep patterns, and the inclusion of a single question regarding the presence of a perceived effect on school work using closed-ended questions. An ensuing open-ended question regarding academic consequences resultant from changes in sleep patterns was introduced, and the prior closed-ended sleep-related support service question was amended to inquire utilization of campus-based sleep clinic services.

Results revealed that only one quarter (25%) of participants reported obtaining the recommended 7 hours of sleep per night, representing inadequate sleep duration [37]. Results also revealed that an even greater number of student veterans were struggling with sleep-related problems than during the previous survey administration. Just under half of the student veterans (49%) reported difficulty falling asleep, and just over half (53.1%) reported difficulty staying asleep, representing problems with sleep initiation and sleep maintenance, respectively. These findings are considerably higher than the previously noted 20 - 40% estimates in military veteran populations [10-12].

More than half (53.3%) of student veterans reported that they had experienced changes in their sleep patterns, with over one third (35.3%) further responding that these changes had affected their school work. These respondents were subsequently invited to complete an open-ended question asking specifically how these changes had affected their school work. A total of 40 student veterans provided free-text manual entry responses which were then categorized into recurring themes and reported by frequency. Several responses in-

cluded more than one theme. The most salient reported themes were those relating to concentration or focus (20) and daytime sleepiness (20). These were followed by themes relating to attendance (6), sleep schedule (5), sleep duration (3) and poor sleep quality (3). This information portrays a conception that student veterans are suffering daytime complaints consequential to their sleep-related problems, and they feel that their school work is being affected. As aforementioned, such consequences can prove exceptionally problematic to college students and may result in compromised learning and lower grade point averages [20,21]. Evidence suggests that students with sleep disorders and disturbances likely do not achieve superlative academic performance and are at higher risk of academic failure [21,22].

Intriguingly, despite previous interest in campus-based student veteran-specific sleep clinic support services, there was markedly low (1%) reported utilization of such services by student veterans. This provides strong evidence that student veterans are not accessing available resources. Although we are unable to determine with great certainty the contributing factors which might be responsible for this finding, we can assume that there was a lack of understanding or awareness among student veterans regarding the availability of these services. This information may prove essential for IHE, as it should raise awareness regarding the necessity of outreach in order to increase the dissemination of information to this population.

2015

For inclusion into the final survey administration, the sleep-related questions were partially amended to again improve the fundamental nature of the previous two inquiries and provide further detailed information regarding sleep-related problems and characteristics. The closed-ended sleep duration question was maintained, while the other questions regarding sleep-related problems and characteristics were relabeled as “changes in sleep patterns since leaving the service” and changed in format slightly to include multiple sequential option responses and include frequencies of occurrence. Participants were once again asked a closed-ended question inquiring as to whether the changes in their sleep patterns have affected their school work and, if so, were given another opportunity to answer an ensuing open-ended question regarding academic consequences resultant from these changes. Finally, the previous closed-ended sleep-related support service question was amended and expanded to address the assumed lack of understanding or awareness among student veterans regarding the availability, as well as the utilization and desire for these services.

The final survey administration revealed that just over one quarter (26%) of student veterans reported obtaining at least 7 hours of sleep on average each night. This finding closely mirrors our previous 2013 survey administration findings (25%), and further adds to the observation that student veterans are obtaining an inadequate sleep duration. Perhaps the most formidable finding was that just under one quarter (23.8%) of student veterans reported that they had not experienced changes in their sleep patterns. Over half (55%) of student veterans did report experiencing changes in their sleep patterns since leaving the service, with one quarter (24.7%) of them selecting that they had difficulty falling asleep, and nearly one third (30.3%) of them selecting that they had difficulty staying asleep. These findings are relatively lower than findings from our previous 2013 survey administration, however it is possible that these findings could be attributed to the aforementioned amendment in question formatting. Nonetheless, these findings provide further evidence contributing to the observation that student veterans are suffering from problems with sleep initiation and sleep maintenance. The related frequency of occurrence regarding these changes was newly collected information during this survey administration. Of those student veterans who reported changes in their sleep patterns since leaving the service, 17% further reported that they had these difficulties some nights, 12% most nights, and 8% every night. This new information provides further insight regarding the occurrence of sleep difficulties.

Nearly one third (32%) of student veterans again reported that changes in their sleep patterns have affected their school work. This finding closely mirrors findings from our previous 2013 survey administration results (35.3%), depicting a sense of continuity regarding their concern for academic consequences. These respondents were again subsequently invited to complete an open-ended question specifically asking how these changes had affected their school work. This time a slightly greater total of 42 student veterans provided free-text manual entry responses, which were then categorized into recurring themes and reported by frequency. Several responses again included more than one theme. The most salient reported themes were again those relating to concentration or focus (23) and daytime

sleepiness (16). These were followed by themes concerning sleep duration (6), poor sleep quality (5), attendance (2) and sleep schedule (2). This information is comparable to our previous 2013 survey administration results, and further portrays the belief that student veterans are suffering daytime complaints consequential to their sleep-related problems, and they feel that their school work is being affected.

Overall response to the amended and expanded closed-ended sleep-related support service questions was markedly low. Only 3.5% of student veterans reported that they were familiar with campus-based sleep clinic support services, and only 0.4% reported utilizing these services. These results further strengthen findings from our 2013 survey administration results and provide a continuity of evidence that there is a lack of understanding or awareness among student veterans regarding the availability of these services, and that they are not accessing available resources. Despite the findings from our 2010 survey administration which revealed that nearly half (48.7%) showed interest in the possibility of utilizing campus-based sleep clinic support services that both diagnose and treat sleep issues, only 13% of respondents expressed interest during this administration. These findings contrast significantly, and although our initial findings provided valuable insight to the university regarding the conception of student veteran-specific sleep clinic support services, and the feasibility of their provision, there has been markedly minimal utilization. Although we are unable to determine with great certainty the contributing factors which might be responsible for this finding, one plausible rationalization could again be due to lack of outreach, awareness, and requisite student veteran expenditure.

Conclusion

Student veterans reported unmet sleep needs, inadequate sleep duration, difficulty initiating and maintaining sleep, and consequential daytime complaints affecting their school work with continuity. These findings may suggest the manifestation of insomnia in student veterans at rates higher than those found in military veteran populations. Insomnia is a significant public health problem manifested by difficulty initiating or maintaining sleep, or when the sleep that is obtained is non-refreshing or poor quality [38]. However, diagnosis cannot be distinctly made vis-à-vis the nature of inquiry included in this needs assessment inquiry. Diagnosis of insomnia is predominantly made through a detailed sleep, medical, substance, and psychiatric history using specific questionnaires and objective instruments such as actigraphy [39]. It is a positive sign that student veterans expressed interest in campus-based sleep services. Given the deleterious academic consequences resultant from poor sleep, it is important for IHE to be responsive, and inquiries to persevere [20-22].

We hope that results from this study provide initial information identifying both the presence and characteristics of self-reported sleep complaints, contribute to a more thorough understanding of student veteran sleep-specific health needs, and lay a solid foundation for which future interdisciplinary studies can build upon.

Recommendations

Future studies should incorporate larger samples obtained from multiple different IHE, comparative studies involving non-veteran traditional college students, standardized questionnaires, and objective measures such as actigraphy. Smaller focus groups and qualitative methods may be employed to obtain a more thorough understanding of how higher education and campus-specific factors contribute to student veteran sleep complaints, disorders, and disturbances. These efforts should be undertaken to obtain a greater appreciation of student veteran sleep needs and enable the development and implementation of unique veteran-friendly programs, policies, and services which may convey the propensity to foster student veterans' matriculation, retention, and successful completion of their university certificates and degrees.

Limitations

We cannot confidently state that the findings from this study can be attributed to the student veteran population as a whole, or even to the entire student veteran population within this single IHE. Findings can only be attributed to those student veterans who participated in this study. No correlation can be made regarding any factors contributing to student veteran sleep complaints. This study only attempts to identify the presence and characteristics of sleep complaints within this population. Needs assessment surveys are self-report by na-

ture, and findings represent only perceptions. The inherent nature of this study did not include comparison between non-veteran college students. Further objective inquiry is obligatory.

Conflict of Interest

No financial interest or any conflict of interests exist.

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Volume 8 Issue 7 July 2019

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