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Psychopathology and Hypersexuality among Veterans with and without Histories of Alcohol-use Disorders

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Abstract

Background and Objectives: Little research has examined the clinical characteristics of U.S. post-9/11 military veterans coping with alcohol problems. Specifically, we examined psychopathology and hypersexuality among male and female post-9/11 veterans with and without a lifetime history of alcohol-use disorders (AUDs). **Methods:** Using data from a baseline telephone interview and follow-up web-based survey, we examined frequencies of AUDs, mental health and addictive disorders, sexual behaviors, hypersexuality, and problematic use of pornography in a national convenience sample of 283 veterans. **Results:** Many (39.1%) veterans met lifetime criteria for AUDs. Bivariate associations revealed that veterans with lifetime AUDs met clinically significant levels of posttraumatic stress disorder and criteria for drug-use disorders (lifetime). Veterans with lifetime AUDs also attended religious services less often, engaged in more solitary masturbation in the past month, and reported more issues with problematic use of pornography and hypersexuality compared to veterans without AUDs. Results from a logistic regression found that lifetime drug-use disorders (OR=4.22) and PTSD symptoms (OR=1.98) were significant predictors of veterans with lifetime AUD status. **Discussion and Conclusions:** We found differences among veterans with lifetime AUDs compared to those without on select measures of psychopathology, sexual behavior, and hypersexuality. **Scientific Significance:** Further screening for substance-use disorders and hypersexuality in Veterans Affairs is strongly encouraged while veterans are transitioning back into civilian life.

Words: 216

Keywords: Alcohol use, hypersexuality, veterans, pornography, sexual behaviors

INTRODUCTION

Many returning US veterans (Operation Iraqi Freedom, 2003-2010; Operation New Dawn, 2010-2011; and Operation Enduring Freedom, 2001-Present) experience problems with substance use, posttraumatic stress disorder (PTSD), depression, and anxiety.¹ Alcohol misuse is common among veterans; the prevalence of lifetime alcohol abuse is estimated at 17.8% in the general US population² compared to 42.2% in previously deployed US veterans.³ Moreover, alcohol-use disorders (AUDs) frequently co-occur with mental health disorders including PTSD and anxiety disorders⁴ and depression.⁵ Although AUDs are frequent among returning US veterans, little research has examined other factors such as hypersexuality that could also generate problems for veterans returning to civilian life, especially since substance-use disorders and hypersexuality commonly co-occur.⁶

Hypersexuality is defined by non-paraphilic sexual behavior with an impulsivity component that often leads to personal distress and impairment in functioning.⁷ In 2012, the American Psychological Association rejected hypersexual disorder from inclusion in the DSM-5⁸; however, its consideration was important for furthering discussion regarding consideration of compulsive/problematic sexual behaviors/disorders. Proposed diagnostic features dimensions of hypersexual disorder included: (a) time consumed by sexual fantasies/urges/behaviors interfering with important activities; (b) sexual behaviors as coping mechanisms for dysphoric moods; (c) sexual behaviors as means of relieving stress, (d) unsuccessful efforts to control or stop sexual behaviors; and (e) continued sexual behavior despite the risk for physical or emotional harm to self or others.⁷ Men with hypersexuality often report problems with compulsive masturbation, excessive use of pornography, frequent casual/anonymous sex with strangers, multiple sexual partners in one occasion, and paid sex.⁹⁻¹¹ Women with hypersexuality report issues stemming from frequent masturbation and pornography use and multiple sexual partners.¹² In 207 treatment-seeking patients with hypersexual disorder, excessive masturbation (78.3%) and problematic pornography use (81.1%) were the most commonly reported hypersexual behaviors.⁹ In general, compulsive/problematic sexual behaviors including hypersexuality remain poorly understood in the

general population.¹³ Even less is known about hypersexuality in military veterans, many of whom have substance-use concerns.¹

In May 2019, the World Health Assembly met and compulsive sexual behavior disorder (CSBD; 6C72) was included in the ICD-11.^{14,15} CSBD is characterized by a persistent pattern of failure to control intense, repetitive sexual impulses or urges resulting in repetitive sexual behavior. Core symptoms include: (a) sexual behavior becoming a central focus of the person's life; (b) numerous unsuccessful efforts to significantly reduce sexual behavior; (c) continued sexual behavior despite adverse consequences; (d) deriving little or no satisfaction from the sexual behavior; and, (d) the sexual behavior has led to great distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning.^{14,15} Rates of compulsive sexual behavior ranging from 11-14% for US military veterans have been preliminarily reported.^{13,16}

We suspect that the study of compulsive/problematic sexual behaviors is expected to continue with the formal inclusion of the CSBD in ICD-11, particularly with an emphasis focused on high-risk populations. For the current study, we will use the term hypersexuality to describe compulsive/problematic sexual behaviors because at the time of data collection (2014-2015), we included a well-validated measure of hypersexuality (described in methods section). Our study is the first to comprehensively examine hypersexuality among veterans with lifetime AUDs. Given that high rates of AUDs have been observed among non-veterans seeking treatment for compulsive sexual behaviors¹⁰, we hypothesized that hypersexuality would be elevated in veterans with AUDs, especially as hypersexuality may constitute a coping mechanism for veterans with psychiatric disorders such as PTSD.^{17 18} At this time, little data are available regarding hypersexuality (or CSBD) among individuals with substance-use disorders, particularly among vulnerable groups such as military veterans. From the information currently available, compulsive/hypersexual behaviors appear to co-occur among those with addictive behaviors,^{10,11} but more research is needed to examine these associations. In addition, we examined relationships between AUDs and multiple sexual behaviors, including problematic pornography use,

anticipating a positive relationship given the association between AUDs and hypersexuality. Further exploratory work is conducted to identify clinically relevant factors associated with AUDs among military veterans since such little data are available and findings could help to improve screening practices for individuals who may benefit from additional intervention.

METHOD

Procedures

The present study is a secondary analysis of data drawn from the Survey of the Experiences of Returning Veterans (SERV), the parent project which received approval from the Institutional Review Boards of the Department of Veterans Affairs and Yale University. Recruitment and other study procedures have been described elsewhere^{19,20} The SERV study was a naturalistic prospective longitudinal observational study and did not involve an active treatment or intervention component. Initial baseline 90-minute telephone interviews were conducted from September 2011-July 2014. Between July 2014 and February 2015, we conducted a web-based follow-up survey asking veterans to complete additional questions about their sexual health and wellbeing. Of the 656 veterans completing the initial baseline telephone interview, 50 veterans were excluded from the follow-up study (11 did not provide consent and 39 did not have emails), leaving 606 eligible veterans. Of those emailed, 295 veterans completed the web-based survey, with 12 removed due to missing data, resulting in a final sample of 283 veterans.

Measures

Sociodemographic Information

Veterans were asked about the following during the baseline interview: age, race/ethnicity, education, marital status, employment status, household income, details of military service history, and religious service attendance.

Psychiatric Disorders

We used the Primary Care Evaluation of Mental Disorders (PRIME-MD) to assess depressive and anxiety disorders.²¹ We used the Alcohol Use Disorder Associated Disabilities Interview Schedule-IV (AUDADIS-IV), a multiple module diagnostic interview assessing DSM-IV conditions, to measure substance-use disorders including alcohol dependence (with AUD being the term to describe the related condition in DSM-5).²² In this study, DSM-IV alcohol dependence was the condition assessed when AUD is described. The AUDADIS-IV is psychometrically sound and reliable for clinical research^{22,23} and for diagnosing mental health disorders.

Posttraumatic Stress Disorder Symptom Severity

Because all participants were no longer active duty, we used the Posttraumatic Stress Disorder Symptom Checklist (PCL-C), a 17-item self-report PTSD rating scale (1=Not At All, 5=Extremely).²⁴ Sample items included, “Avoid activities or situations because they remind you of a stressful experience from the past?” and “Trouble falling or staying asleep?” The PCL-C demonstrated high internal consistency ($\alpha=0.96$).

Sexual Behaviors

We used an adapted version of the Sexual Behaviors and Pornography History Questionnaire to measure participants' past sexual experiences.²⁵ Using single items, the questionnaire assessed participants' numbers of lifetime sexual partners, past 30-day sexual activities (e.g., oral sex, vaginal sex, anal sex, and mutual masturbation) and histories of sexually transmitted infections. We also used single items to assess behaviors associated with use of pornography such as frequency of pornography use and typical length of session. This questionnaire has been used previously to describe sexual behaviors of non-veteran samples but is not intended to assess severity.

Problematic Use of Pornography

We used the Problematic Pornography Use Scale (PPUS), a 12-item questionnaire that measures problems related to distress and functional impairment, excessive use, control difficulties, and use of pornography to escape or avoid negative mood states, to assess problematic pornography use.²⁶ Sample question items included, “I often think about pornography” and “I keep on watching pornography materials even though I intend to stop”. The PPUS demonstrated high internal consistency ($\alpha=0.93$).

Hypersexuality

We used the Hypersexual Behavior Inventory (HBI), an inventory with 19 questions scored along 5-point Likert responses (1=Never to 5=Very Often) that assesses different characteristics of hypersexuality, such as engaging in sexual behavior in response to stress or dysphoric mood, repeated unsuccessful attempts to control sexual thoughts, urges, and behaviors, and sexual behavior leading to impairment in functioning. Total score ranges from 19 to 95, with a proposed clinical threshold score of 53 or more. Three subscales include coping (e.g., “I use sex to forget about the worries of daily life”), consequences (e.g., “My sexual thoughts and fantasies distract me from accomplishing important tasks”), and control (e.g., “Even though my sexual behavior is irresponsible or reckless I find it difficult to stop”) of hypersexuality.²⁷ All alpha coefficients were high reflecting internal consistency: Total ($\alpha=0.96$), Consequences ($\alpha=0.89$), Coping ($\alpha=0.93$), and Control ($\alpha=0.93$).

Analyses

We used SAS 9.3 to conduct descriptive statistics, Pearson’s chi-squares, and Welch’s *t*-tests (unequal variance assumed) to examine group differences. To better understand which potential psychiatric comorbidities distinguished the two groups, we performed logistic

regression and included any significant demographic covariates in the model. In all analyses, two-tailed tests and overall alpha levels of 0.05 were used.

RESULTS

Most respondents were male (70.6%, $n=197$) with a mean age of 35.1 ($SD=9.2$) years. The sample was 69.3% non-Hispanic white/Caucasian, 10.1% non-Hispanic black/African American, and 20.6% other (Hispanic, Asian American, Native American). Roughly half the sample was employed full-time (46.2%) and married (54.8%). Educational status included 9.0% high-school graduate, 47.3% associate degree/some college, and 43.7% college graduate. Most veterans had been deployed more than once (41.0%=1 deployment, 32.4%=2 deployments, 26.6%=3+ deployments). Of respondents, 65.9% had served in the Army, 12.5% in the Air Force, 10.8% in the Marine Corps, and 10.8% in the Navy.

Approximately 39.1% ($n=109$) reported a lifetime history of DSM-IV alcohol dependence (i.e., those with AUDs), with four veterans not completing the AUDADIS-IV. Of the 109 veterans with lifetime AUDs, 49 (45.0%) met past-year (current) diagnostic criteria for AUDs. We first compared veterans with lifetime but not current AUDs (remission) to those with current AUDs on demographics, sexual behaviors, and psychopathologies. As analyses revealed no statistical differences between the two groups, we combined them to form one lifetime group to have greater statistical power for study comparisons.

Few sociodemographic measures differentiated veterans with and without lifetime AUDs (Table 1). Religious service attendance was lower among veterans with AUDs compared to those without. Veterans with AUDs compared to those without reported greater PTSD symptom severity and were more likely to have drug-use disorders and report solitary masturbation.

Veterans with AUDs compared to those without had higher HBI total and subscale scores and higher PPUS total scores in bivariate analyses (Table 1).

Next, we conducted a logistic regression and entered all significant demographic (e.g., religious service attendance), mental health (e.g., lifetime drug-use disorders, PTSD symptom severity) and sexual health (e.g., past-month masturbation, problematic pornography use, hypersexuality) variables into the model. The overall model was significant, $X^2=26.12$, $p<0.001$ with $df=7$, Nagelkerke's $R^2=15\%$. Specifically, we found that lifetime drug-use disorders (OR=4.22, 95% CI=1.03-17.35, $p=0.046$) and PTSD symptoms severity (OR=1.98, 95% CI=1.03-3.83, $p=0.044$) were significant predictors, in statistical modeling, of veterans with lifetime AUD status.

DISCUSSION AND CONCLUSIONS

Given the paucity of research, the current study investigated the clinical characteristics and sexual behaviors of male and female post-9/11 veterans with and without a lifetime history of AUDs. No significant demographic differences were noted between veterans with and without lifetime AUDs except for religious service attendance, consistent with prior research indicating that alcohol and tobacco use is lower among religious individuals.²⁸ Prior work has revealed higher rates of AUDs among male veterans as compared to female veterans with trauma histories.²⁹ In the current study, we found no such difference among male and female veterans with regard to lifetime AUDs. Although exhibiting similar levels of depression and anxiety, veterans with lifetime AUDs were more likely than those without to meet lifetime criteria for drug-use disorders. As hypothesized and like previous studies,^{30,31} we found veterans with AUDs were more likely to report higher PTSD symptom levels compared to those without lifetime AUDs. We suspect that individuals with AUDs may consume and misuse alcohol to self-

medicate and avoid negative psychiatric symptoms,³² although this speculation requires further examination. At this time, drinking motives among veterans reporting concerns with hypersexuality have not been systematically studied but warrant further research. The extent to which veterans may have engaged in heavy, episodic drinking while engaging in hypersexual behaviors is unclear and warrants additional study. Future research measuring both sexual behavior and drinking patterns are needed, particularly among treatment-seeking samples.

As hypothesized, veterans with lifetime AUDs reported higher scores on a measure of hypersexuality, although scores on the questionnaire were considerably below the suggested HBI clinical cut-off score of 53. Such elevations, although perhaps not clinically significant, could reflect areas where some veterans may be having difficulty managing their sexual urges, thoughts, and behaviors. Overall, approximately 5% of veterans met or exceeded the clinical cut-off score on the HBI, which is above the estimated rates in the general population that are estimated to range from 1-3%.⁷ Moreover, lower scores on the HBI were expected since this was a non-clinical sample collected across the US. However, our finding that hypersexuality is potentially problematic for some veterans with current or past histories of AUDs is noteworthy given the inclusion of compulsive sexual behavior disorder in the ICD-11,^{14,15} and reflects an area in need of further study for both veteran and non-veteran populations. Veterans with lifetime AUDs reported higher scores on a measure of problematic pornography use, although both groups with and without AUDs reported similar levels of sexual activities and pornography use. Elevated hypersexuality was observed across all three subscales relating to coping, consequences, and impaired self-control. When attempting to identify statistical predictors of lifetime AUDs, we found that only PTSD symptom severity and lifetime drug-use disorders were associated with lifetime AUD status among our sample of combat veterans. It is interesting that

hypersexuality and problematic pornography use were no longer significant in the model.

However, a large well-powered study is needed to investigate possibly nuanced relationships between hypersexuality, problematic pornography use, and AUDs, with consideration of other clinical comorbidities, for both veteran and non-veteran populations.

Further research is needed to examine the extent to which maladaptive sexual coping strategies may be used by veterans with AUDs for alleviating distress. Although not examined in our study, prior research has found increased likelihoods of contracting sexually transmitted infections among individuals reporting hypersexuality.³³ Our study did not specifically assess some high-risk sexual behaviors (e.g., condom-less sex), and such behaviors require further study among veterans, particularly for those reporting hypersexuality. This study is the first to examine the relationships between AUDs and hypersexuality among combat veterans, a group noted for being at high risk of developing substance-use disorders and other psychiatric disorders.⁵ Here, we assessed for hypersexuality among veterans using the HBI, an instrument that has been validated in treatment and non-treatment seeking samples, but has not been used among OEF/OIF veterans, many of whom have psychiatric disorders. Interventions that concurrently address problems with alcohol use and risky sexual behaviors may reduce associated harms for veterans. Because of the associations of AUDs with PTSD, drug-use disorders, and hypersexuality, it is recommended that healthcare professionals screen for these conditions when treating individuals with a history of alcohol problems. Although we did not find significant gender-related differences in terms of AUDs among our sample of post-9/11 veterans, additional research is needed given the growing percentage of female military personnel and high rates of psychiatric conditions (including addictions) among returning veterans.¹

Considering the strengths and weaknesses of our study, further investigation is needed of larger samples over time to better understand the temporal progressions and etiologies of AUDs and other co-occurring psychiatric conditions. More research is needed to understand better the impacts of AUDs and hypersexuality on veterans. For example, both problematic alcohol consumption³⁴ and problematic pornography use¹⁸ have been reported as coping behaviors for military veterans with PTSD. Additional research is needed to examine what proportion of veterans with AUDs are also engaging in hypersexual behaviors (e.g., casual/anonymous sex, paid sex, problematic pornography use) as a means of reducing PTSD or other mental health symptoms. Preliminary evidence taken from university students suggests that individuals reporting issues with hypersexuality have more difficulty regulating their emotions compared to individuals without such problems.³⁵ Given that one of the criteria for hypersexual disorder is using sexual behavior to cope with dysphoric mood,⁷ it is possible that veterans with AUD may be engaging in various behaviors (alcohol consumption, sexual activity) to cope with their mental health problems (e.g., PTSD). However, additional research is needed to explore the motives for both alcohol use and risky sexual behavior(s) among military veterans, particularly if these behaviors are related to mental health symptoms.

In addition, future studies could investigate patterns of “cross addictions” among veterans and other populations, as discussed elsewhere.⁶ The current study used cross-sectional data and cannot speak to causation, though our results speak to the importance of understanding the associations between AUDs, psychopathologies, sexual behaviors, and hypersexuality among veterans and other populations. The development and study of AUD interventions should consider other psychiatric disorders given the increased likelihood of comorbidities among returning US veterans.⁴ A final limitation is that we were not able to compare SERV participants

who completed or did not complete the Time 2 web-based survey. The IRB approval limited the scope of data collection, and we could only merge data from Time 1 with those who provided informed consent at Time 2. However, it is unclear what, if any, differences existed between veterans who participated in only the baseline investigation from those who also completed both times points. Self-selection to participate in the study is a further limitation of the design, although we have no reason to believe the approach skewed our results.

The current findings suggest that veterans with lifetime AUDs may be at high risk for experiencing issues with hypersexuality and other psychiatric disorders such as drug-use disorders. Although similar in sexual behaviors to veterans without AUDs, those with AUDs may have less healthy approaches to sexual behaviors. When treating individuals with AUDs and co-occurring disorders, it is important to screen for hypersexuality and other sexual behaviors to help ensure better health and wellness outcomes for patients.

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Table 1. Demographic, Military History Addictive Behaviors, Mental Health Conditions, and Sexual Characteristics by Alcohol Use Disorder Status

	Lifetime history of alcohol use disorders		X^2/t	V/d	<i>p</i> -value
	Yes (<i>n</i> =109)	No (<i>n</i> =170)			
	<i>n</i> [%] / <i>M</i> (SD)	<i>n</i> [%] / <i>M</i> (SD)			
Gender					
Female	25 [30.5%]	57 [69.5%]	3.59	0.11	0.06
Male	84 [42.6%]	113 [57.4%]			
Marital Status					
Married	60 [39.2%]	93 [60.8%]	0.10	0.02	0.95
Formerly married	19 [37.3%]	32 [62.7%]			
Never married	30 [40.0%]	45 [60.0%]			
Religious Service					
Never	33 [37.9%]	54 [62.1%]	11.07	0.20	0.004
Monthly or less	50 [51.0%]	48 [49.0%]			
Monthly or more	26 [27.7%]	68 [72.3%]			
Household Income					
Under 35,000	42 [40.4%]	62 [59.4%]	0.31	0.03	0.86
35,000 to 75,000	44 [39.3%]	68 [60.7%]			
76,000 or higher	22 [36.1%]	39 [63.9%]			
Number of Deployments					
1 deployment	42 [36.8%]	72 [63.2%]	0.52	0.04	0.77
2 deployments	36 [40.0%]	54 [60.0%]			
3+ deployments	31 [41.9%]	43 [58.1%]			
Race					
White	76 [39.6%]	116 [60.4%]	0.80	0.05	0.67
Black	9 [32.1%]	19 [67.9%]			
Other	24 [42.1%]	33 [57.9%]			

Type of employment

Full time	49 [38.0%]	80 [60.5%]	0.12	0.02	0.94
Part time	15 [39.5%]	23 [60.5%]			
Other: unemployed, disabled	45 [40.2%]	67 [59.8%]			

Military Branch

Army	71 [38.6%]	113 [61.4%]	1.09	0.06	0.78
Air Force	12 [34.3%]	23 [65.7%]			
Marine Corps	14 [46.7%]	16 [53.3%]			
Navy	12 [40.0%]	18 [60.0%]			

Addictive behaviors

Drug-Use Disorder (Lifetime)	11 [8.3%]	6 [1.2%]	8.79	0.18	0.04
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Mental health disorder

Major Depressive Disorder	40 [36.7]	49 [29.0%]	1.17	0.08	0.18
PTSD (PCL-C score > 36)	83 [76.1%]	104 [61.2%]	6.74	0.16	0.013
Anxiety Disorder (Lifetime)	47 [43.1%]	68 [40.2%]	0.23	0.03	0.63

Sexual Behaviors (past 30 days)

	79 [72.5%]	115 [67.5%]	0.73	0.05	0.39
Vaginal intercourse	59 [54.6%]	88 [51.8%]	0.22	0.03	0.72
Oral sex	89 [81.7%]	114 [67.1%]	7.14	0.16	0.009
Solitary masturbation					

Sexually transmitted infection	36 [33.0%]	47 [27.8%]	0.86	0.06	0.41
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Hypersexual Behavior Inventory

Total Score ^a		29.34 (12.95)			
Consequences subscale ^b	35.10 (15.19)	5.20 (2.41)	-3.27	0.41	0.001
Coping subscale ^c		12.35 (6.25)			
Control subscale ^d	6.25 (3.14)	11.79 (5.83)	-2.97	0.38	0.003
	14.86 (6.81)		-3.11	0.38	0.002
	13.99 (7.09)		-2.71	0.34	0.007
Cut-Off Score (>53)	12 (4.3%)	14 (5.0%)	0.60	0.05	0.437
Problematic Pornography	1.96 (0.98)	1.68 (0.88)	-2.20	0.30	0.029

Use Scale^e

**Frequency of
pornography use^f**

Daily					
At Least Weekly	14 [14.7%]	15 [12.0%]	0.73	0.06	0.694
At Least Monthly	36 [37.9%]	44 [35.2%]			
	45 [47.4%]	66 [52.8%]			

Note. PCL-C=PTSD Checklist Civilian Version. Pearson Chi-square test was used for dichotomous variables. Welch's *t* test was used for continuous variables. Cramer's *V* was calculated for categorical variables where 0.1 = small, 0.3 = medium, and 0.5 = large effect sizes. Cohen's *d* was calculated for continuous variables where 0.2 = small, 0.5 = medium, and 0.8 = large effect sizes. Sample size ranges from 277 to 283. ^a Absolute range, 19–95. ^b Absolute range, 4–20. ^c Absolute range, 7–35. ^d Absolute range, 8–40. ^e Absolute range, 1–5. ^f Absolute range 1 (Never) to 6 (Daily or more times per day).

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