



Association of lifetime homelessness and justice involvement with psychiatric symptoms, suicidal ideation, and suicide attempt among post-9/11 veterans

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ABSTRACT

Both homelessness and criminal justice involvement can impact mental health symptoms and increase risk for suicide. Despite this, few studies have examined their cumulative impact. Moreover, no studies to date have examined the impact of these social determinants of health on post-9/11 veterans, a population with high rates of housing insecurity and justice involvement. The current study sought to better understand the adverse impacts of homelessness and justice involvement on mental health symptoms and suicide risk among post-9/11 veterans. We carried this out by conducting a secondary analysis of cross-sectional data from a 2018 national survey of men and women post-9/11 veteran users and non-users of Veterans Health Administration (VHA) services (N = 15,067). Gender-stratified Poisson and multivariate regressions examined mental health symptoms and suicide risk based on history of homelessness and justice involvement. Models adjusted for sociodemographics, military-related variables, and trauma exposure. Homelessness and justice involvement were both independently associated with more severe posttraumatic, depressive, and substance use symptoms as well as increased rates of suicidal ideation and attempt relative to those with no history of homelessness or justice involvement. Veterans with a history of both homelessness and justice involvement reported the most severe mental health symptoms and suicide risk. This study found consistent positive associations with mental health symptoms for homelessness and justice-involved veterans. Enhancing and increasing access to services that address complex mental health presentation among those with histories of justice involvement and housing instability remain necessary.

1. Introduction

A growing body of work has delineated the important role of social determinants of health (SDOH) on veterans' mental health. Deleterious SDOH span myriad domains, including housing instability, financial strain, violence exposure, and justice involvement. In addition to the potentially stressful, and at times traumatic, experience of these SDOH, these factors are also associated with higher rates of psychiatric diagnosis and increased risk for suicide among veterans (Blodgett et al., 2015; Blossnich et al., 2017, 2020).

Studies largely conducted within Veterans Health Administration (VHA) settings have found that veterans with a history of criminal

justice involvement are more likely to experience psychiatric diagnoses and symptoms (e.g., posttraumatic stress disorder [PTSD], depression, substance use disorders) relative to non-veteran justice-involved adults and non-justice-involved veterans (Blodgett et al., 2015; Finlay et al., 2019; Holliday et al., 2021a; Taylor et al., 2020). Mental health diagnoses are also particularly common among homeless veterans (Ding et al., 2018; Dunne et al., 2015). Ding and colleagues noted that 76.7% of their sample of currently homeless veterans had at least one previously diagnosed psychiatric condition and 47.4% had met criteria for an alcohol or drug use disorder. Additionally, both justice-involved and homeless veterans are at elevated risk for suicidal self-directed violence (Hoffberg et al., 2018; Holliday et al., 2021b; Palframan et al., 2020).

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The prevalence of mental health concerns appears especially notable among post-9/11 homeless and justice-involved veterans. While rates of homelessness and justice involvement do not appear to be elevated among recent veterans relative to prior cohorts, post-9/11 homeless and justice-involved veterans appear to have higher rates of several psychiatric diagnoses. For instance, post-9/11 veterans comprised less than 3% of all veterans accessing VHA homeless programming but constitute 11% of all VHA-using veterans (Tsai et al., 2013a). Similarly, post-9/11 veterans were less likely than other cohorts of veterans to be incarcerated, comprising only 3.9% of incarcerated veterans (Tsai et al., 2013b). Nonetheless, post-9/11 homeless veterans have a substantially higher rate of PTSD relative to prior cohorts (Tsai et al., 2013a). Post-9/11 justice-involved veterans also have reported higher rates of combat exposure, drug abuse or dependence, and PTSD relative to other cohorts (Tsai et al., 2013b).

Although justice-involvement and homelessness are uniquely associated with poorer mental health functioning, these factors rarely occur in isolation. Tsai et al. (2014) noted that, among a sample of incarcerated male veterans, the rate of lifetime homelessness (30.3%) was nearly 5 times greater than the rate in the general adult male population and twice the rate of incarcerated male non-veterans (Greenberg and Rosenheck, 2008, 2010). The prevalence of homelessness among incarcerated veterans is particularly notable when considering estimated rates of lifetime homelessness in the general population (8.5%; Tsai et al., 2016).

A bidirectional relationship between criminal justice involvement and homelessness has also been noted within the veteran population (Cusack and Montgomery, 2017). This reciprocal relationship often results in substantially decreased psychosocial functioning (Tsai and Rosenheck, 2015). Current or prior justice involvement can impact one's ability to qualify for and acquire housing or associated social services (e.g., access to homeless shelters; Pogorzelski et al., 2005; Rolfe et al., 2017; U.S. Government, 2011). In addition, a criminal history can impede employment (Tsai and Rosenheck, 2015), which can further strain financial stability and impact the ability to maintain stable housing. In addition, homeless individuals may resort to criminogenic behavior (e.g., trespassing for shelter; theft to obtain food) as a means of survival given limited resources (Fischer, 1988; McCarthy and Hagan, 1991; Solomon and Draine, 1995). The co-occurrence of justice involvement and homelessness may become a vicious cycle that can be difficult to escape. Yet mental health research to date has generally focused on either justice-involved or homeless veterans as distinct sub-populations.

There has been limited research specific to the veteran population examining the cumulative effect of justice involvement and homelessness. Anecdotal reports have noted that justice involvement can impede the psychosocial rehabilitative process by affecting the ability to attain stable employment and housing (Tsai and Rosenheck, 2015). Greenberg and Rosenheck (2008) noted that in the general population, mental health and substance use are substantially elevated among incarcerated individuals with a history of homelessness relative to those with no history of homelessness. No research to date has examined mental health among veterans who experienced both justice involvement and homelessness.

Several factors can drive poorer functioning and mental health sequelae among veterans experiencing justice involvement and/or homelessness. The transition from jail or prison to the community may be particularly difficult, with many individuals reporting they are ill-prepared for independent living due to limited financial and social support (Mettraux and Culhane, 2004). Veterans who experience concomitant housing instability and a criminal justice history may also face disparities in accessing social (e.g., transitional housing) and health (e.g., evidence-based psychotherapy) services (Bui et al., 2019). These barriers to care can exacerbate mental health symptoms and risk for suicide. The dual burden of homelessness and justice involvement may also limit financial resources and drive occupational difficulties (e.g., finding and maintaining meaningful employment; Blonigen et al.,

2019). This can introduce additional barriers to accessing health and social services (e.g., lack of transportation or childcare).

While approximately 30% of all veterans access VHA services, many justice-involved, and some homeless, veterans do not qualify for VHA services due to the nature of their discharge from military service (Department of Veterans Affairs [VA], 2018; Holliday et al., 2021c; Seamone et al., 2014). According to one report, approximately 60% of incarcerated veterans received an “honorable discharge,” with 6.4% of veterans in federal prison and 8.8% of veterans in state prison having received an “other than honorable discharge” (Bureau of Justice Statistics, 2007). Similarly, 2.8% of veterans in state prison and 5.6% of veterans in federal prison having received a “dishonorable discharge” (Bureau of Justice Statistics, 2007). Veterans who were dishonorably or other-than-honorably discharged may be at heightened risk for homelessness (Mettraux et al., 2013). VHA service utilization rates of homeless veterans are notably high; this population often accesses both VHA and community based care where an absence of fully integrated medical records may inhibit continuity of care and limit understanding of the health care needs of this at-risk population (Etchin et al., 2021). As such, additional understanding of the health needs of homeless and justice-involved veterans who are not using and/or eligible for VHA services remains requisite.

A final aspect to consider is that relatively limited research has focused on the mental health needs of justice-involved and/or homeless women veterans. Most women veterans alive today served during the post-9/11 period (VA, 2015). From 2005 to 2015, the number of women veterans enrolled in VHA services also increased 83.9%, with their rate of increase in utilizing VHA services outpacing male veterans (VA, 2012, 2015). Moreover, the mental health needs of post-9/11 veterans differ by gender (Maguen et al., 2010). For example, women veterans are more likely to be diagnosed with a depressive disorder, whereas men veterans are more likely to be diagnosed with PTSD or an alcohol use disorder (Maguen et al., 2010). Similarly, Hoffmire et al. (2021a) noted that correlates of suicidal ideation differed by sex, with housing and financial concerns being a correlate for females but recent stressful life events being associated with suicidal ideation for males. Such findings suggest the necessity of gender-specific understanding of post-9/11 veterans' mental health needs. However, prior research has included a limited number of women veterans with a history of homelessness and/or justice involvement, precluding more robust inferential analysis.

The current study examined the cumulative effects of homelessness and justice involvement on mental health outcomes among post-9/11 men and women veterans. Mental health domains examined included mental health symptoms (PTSD and depression), substance use (alcohol and opioid), recent and lifetime suicidal ideation, and lifetime suicide attempt. Population-based sampling assured that data collection included users and non-users of VHA care.

2. Method

2.1. Participants and procedures

The current study was a secondary analysis of data from the Comparative Health Assessment Interview (CHAI) Research Study (Hoffmire et al., 2021b). Only veterans with complete data regarding lifetime history of homelessness and justice involvement were included, resulting in an analytic sample of 15,067 veterans (men: $n = 9530$; women: $n = 5537$). All participants provided informed consent; the study was approved by the VA Central Institutional Review Board.

A complex sampling frame for potential participants was identified using the U.S. Veterans Eligibility Trends and Statistics database, which provides the most complete information available on all living U.S. veterans. The frame stratified the sample of deployed veterans based on branch (i.e., Army, Air Force, Marines, Navy), component (i.e., Active Duty, Reserves/National Guard), and pre-vs. post-9/11 first activation. Non-deployed veterans were sampled using the same proportions across

strata. The sampling design included a 30% oversampling of women veterans.

Veterans were invited to participate via mail. Survey participation occurred online or via computer-assisted telephone interview. For additional information regarding sampling methodology or procedures, see Hoffmire et al. (2021b).

2.2. Measures

The predictor variable for all analyses was lifetime history of homelessness and/or justice involvement, created from dichotomous items assessing homelessness (“Have you ever been homeless for a period of 2 weeks or more at any time in your life?”) and justice involvement (“Did you ever go to jail?”). Items were based on those used in prior veteran research (e.g., Cypel et al., 2020). Responses were used to form a single predictor variable with four levels: 1) no history of homelessness or justice involvement, 2) history of homelessness only, 3) history of justice involvement only, and 4) history of both homelessness and justice involvement.

The PTSD Checklist for DSM-5 (Weathers et al., 2013) and Patient Health Questionnaire-9 (PHQ-9; Kroenke et al., 2001) assessed past-week PTSD symptoms and past two-week depressive symptoms, respectively. For the current study, the first 8 items of the PHQ-9 were scored to assess depressive symptom severity (i.e., Patient Health Questionnaire-8; Kroenke et al., 2009), with item 9 utilized to assess recent suicidal ideation (Louzon et al., 2016). A modified version of the Columbia-Suicide Severity Rating Scale (Posner et al., 2011) assessed lifetime suicidal ideation (“Have you ever actually had any thoughts of killing yourself?”) and suicide attempt (“Have you ever made a suicide

attempt?”). Past-year probable alcohol misuse was assessed using the Alcohol Use Disorders Identification Test (AUDIT; Bush et al., 1998). Lifetime opioid use was determined from the initial screening items of the National Institute on Drug Abuse Alcohol, Smoking and Substance Involvement Screening Test (WHO ASSIST Working Group, 2002) for illicit opioids and/or non-medical prescription opioid use.

Additional covariates included the Adverse Childhood Experiences (ACEs) Inventory (Blosnich et al., 2021; Felitti et al., 1998) and the universal VHA military sexual trauma (MST) screen, as well as questions assessing sociodemographics (i.e., age, race, ethnicity, education, gender) and military service (i.e., service branch, if deployed during military service).

2.3. Analytic plan

All analyses were gender-stratified. Summary statistics for socio-demographic and military service characteristics, as well as MST and ACEs, were computed to describe the sample (see Table 1 for men and Table 2 for women). The associations between these characteristics and the predictor variable of interest (i.e., homelessness and justice involvement) were then evaluated using parametric or equivalent non-parametric tests (e.g., Chi-square, analysis of variance), as appropriate.

Crude associations between the predictor variable and each of the seven dependent variables of interest (i.e., PTSD symptoms, depressive symptoms, probable alcohol misuse, lifetime opioid misuse, recent suicidal ideation, lifetime suicidal ideation, lifetime suicide attempt) were then examined. Linear regressions were used for PTSD and depression symptoms, with estimated mean differences and 95% confidence intervals (CIs) calculated for each. Poisson regressions with robust error

Table 1
Sample characteristics by homelessness and justice involvement (JI) for men.

	No history of homelessness or JI (n = 6944)	History of homelessness and not JI (n = 790)	History of JI and not homelessness (n = 1206)	History of homelessness and JI (n = 590)
Age	Mean (SD) 39.52 (0.09)	35.99 (0.32)	38.26 (0.28)	35.38 (0.29)
	Raw N (Weighted %)			
Race/Ethnicity				
White single race, non-Hispanic	4992(71.97%)	464(58.97%)	776(63.59%)	345(59.18%)
Black single race, non-Hispanic	710(9.18%)	121(14.64%)	172(13.47%)	111(17.67%)
Other/Multi race, non-Hispanic	589(8.67%)	98(12.44%)	112(10.39%)	69(12.08%)
Hispanic	653(10.18%)	107(13.95%)	146(12.55%)	65(11.07%)
Education (n = 9525)				
< High school/high school/GED	676(10.45)	126(17.83)	210(18.62)	158(29.63)
Some college credit, no degree	1730(26.80)	289(37.14)	418(36.12)	244(40.69)
Associate’s, bachelor’s degree, graduate degree	4534(62.76)	375(45.04)	577(45.27)	188(29.69)
Primary Branch of Service (n = 9480)				
Army	3372(47.91)	441(55.29)	654(52.28)	385(62.95)
Marine Corps	828(14.63)	113(16.45)	175(17.20)	75(13.97)
Navy	1088(17.02)	129(17.03)	218(18.42)	90(17.95)
Air Force	1625(20.45)	100(11.23)	153(12.10)	34(5.13)
Ever Deployed (n = 9525)				
Yes	5381(76.26)	558(66.86)	923(75.51)	366(58.38)
No	1561(23.74)	231(33.14)	282(24.49)	223(41.62)
MSH (n = 9372)				
Yes	251(3.68)	87(10.29)	49(4.04)	57(10.44)
No	6609(96.32)	674(89.71)	1136(95.96)	509(89.56)
MSA (n = 9410)				
Yes	59(0.88)	24(2.62)	14(1.18)	17(3.46)
No	6817(99.12)	743(97.38)	1180(98.82)	556(96.54)
ACEs (n = 9361)				
0 ACEs	1993(27.78)	99(13.04)	216(18.32)	63(10.51)
1 or 2 ACEs	2488(37.03)	163(20.24)	387(32.56)	140(23.34)
3+ ACEs	2359(35.18)	500(66.72)	582(49.12)	371(66.15)

Note. All p-values < .001. Percentages were calculated based on the available sample size for each variable. The sample size for each variable was based on n = 9530 unless noted otherwise. Percentages were weighted using the main study population weight. ACEs = Adverse Childhood Experiences; JI = justice involvement; MSA = military sexual assault; MSH = military sexual harassment; OEF = Operation Enduring Freedom; OIF = Operation Iraqi Freedom; OND = Operation New Dawn.

Table 2
Sample characteristics by homelessness and justice involvement (JI) for women.

	No history of homelessness or JI (n = 4363)	History of homelessness and not JI (n = 652)	History of JI and not homelessness (n = 327)	History of homelessness and JI (n = 195)
Age	Mean (SD) 37.62 (0.13)	34.31 (0.35)	35.06 (0.44)	34.47 (0.54)
	Raw N (Weighted %)			
Race/Ethnicity (n = 5536)				
White single race, non-Hispanic	2525(57.55%)	311(47.88%)	170(50.92%)	83(45.04%)
Black single race, non-Hispanic	891(19.58%)	176(25.92%)	82(24.87%)	59(29.71%)
Other/Multi race, non-Hispanic	381(9.17%)	73(10.28%)	34(11.82%)	24(12.09%)
Hispanic	566(13.70%)	92(15.92%)	41(12.38%)	28(13.16%)
Education (n = 5532)				
< High school/high school/GED	184(5.84)	63(12.58)	19(8.21)	29(14.56)
Some college credit, no degree	824(21.62)	197(33.60)	110(34.02)	75(41.87)
Associate's, bachelor's degree, or graduate degree	3352(72.54)	391(53.82)	197(57.77)	91(43.57)
Primary Branch of Service (n = 5524)				
Army	2116(50.70)	369(58.49)	186(59.85)	115(62.45)
Marine Corps	164(5.05)	36(7.54)	16(7.72)	9(5.48)
Navy	861(19.07)	123(16.67)	68(17.62)	50(24.08)
Air Force	1215(25.19)	122(17.30)	54(14.80)	20(7.99)
Ever Deployed (n = 5536)				
Yes	2779(53.97)	392(45.35)	209(47.74)	103(37.64)
No	1583(46.03)	260(54.65)	118(52.26)	92(62.36)
MSH (n = 5272)				
Yes	1859(40.76)	380(58.27)	147(41.69)	123(57.95)
No	2291(59.24)	239(41.73)	167(58.31)	66(42.05)
MSA (n = 5288)				
Yes	641(14.75)	205(32.91)	73(21.76)	75(33.43)
No	3532(85.25)	408(67.09)	242(78.24)	112(66.57)
ACEs (n = 5416)				
0 ACEs	1082(24.34)	87(13.21)	47(15.14)	21(7.68)
1, 2 or 3 ACEs	1925(45.13)	183(26.68)	112(33.85)	47(22.34)
4+ ACEs	1258(30.53)	367(60.11)	162(51.01)	125(69.98)

Note. All p-values < .001. Percentages were calculated based on the available sample size for each variable. The sample size for each variable was based on n = 5537 unless noted otherwise. Percentages were weighted using the main study population weight. ACEs = Adverse Childhood Experiences; MSA = military sexual assault; MSH = military sexual harassment; OEF = Operation Enduring Freedom; OIF = Operation Iraqi Freedom; OND = Operation New Dawn.

variance were conducted to estimate prevalence ratios, and associated 95% CIs, for the binary outcomes (probable alcohol misuse, lifetime opioid misuse, recent suicidal ideation, lifetime suicidal ideation, and lifetime suicide attempt). All analyses accounted for the complex survey

design (e.g., weighting, noncoverage, nonresponse; see [Blosnich et al., 2021](#)).

Following this, multivariate analyses were conducted. Sociodemographics, military-related characteristics, MST exposure, and ACEs

Table 3
Mental health based on lifetime homelessness and justice involvement among men veterans.

Outcome	History of Homelessness and not JI		History of JI and not Homelessness		History of Homelessness and JI	
	Unadjusted EMD (95% CI)	Adjusted EMD (95% CI)	Unadjusted EMD (95% CI)	Adjusted EMD (95% CI)	Unadjusted EMD (95% CI)	Adjusted EMD (95% CI)
PCL-5	14.8 (12.4, 13.3) ^d	10.3 (8.6, 12.1) ^d	8.7 (7.1, 10.3) ^d	6.3 (4.9, 7.8) ^d	22.1 (19.9, 24.3) ^d	17.8 (15.6, 20.0) ^d
PHQ-8	4.3 (3.7, 4.9) ^d	2.9 (2.3, 3.5) ^d	2.3 (1.8, 2.7) ^d	1.6 (1.2, 2.1) ^d	6.0 (5.4, 6.6) ^d	4.5 (3.9, 5.2) ^d
	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)
Alcohol Misuse	1.01 (0.91, 1.13)	0.99 (0.89, 1.11)	1.44 (1.33, 1.55) ^d	1.40 (1.29, 1.51) ^d	1.40 (1.26, 1.55) ^d	1.37 (1.22, 1.52) ^d
Lifetime Opioid	2.18 (1.66, 2.86) ^d	1.75 (1.32, 2.32) ^c	2.91 (2.38, 3.55) ^d	2.57 (2.10, 3.15) ^d	5.42 (4.41, 6.66) ^d	4.22 (3.36, 5.31) ^d
Recent SI	2.64 (2.21, 3.16) ^d	1.95 (1.60, 2.38) ^d	1.78 (1.50, 2.11) ^d	1.58 (1.32, 1.88) ^d	3.32 (2.82, 3.92) ^d	2.44 (2.00, 2.98) ^d
Lifetime SI	1.84 (1.63, 2.08) ^d	1.42 (1.24, 1.61) ^d	1.53 (1.37, 1.72) ^d	1.39 (1.24, 1.56) ^d	2.36 (2.09, 2.67) ^d	1.82 (1.60, 2.08) ^d
Lifetime SA	3.79 (2.90, 4.95) ^d	2.47 (1.84, 3.32) ^d	2.66 (2.00, 3.52) ^d	2.03 (1.52, 2.69) ^d	6.25 (4.99, 7.83) ^d	3.73 (2.85, 4.87) ^d

Note. No history of homelessness nor JI is the reference group for all reported values. All models are adjusted for age, education, branch of service and ACEs. PCL-5 and lifetime suicide attempt models also adjusted for race/ethnicity, history of deployment, and MST; alcohol and lifetime opioid use models also adjusted for race/ethnicity and history of deployment; and recent and lifetime suicidal ideation models also adjusted for MST. ACEs = adverse childhood experiences; CI = confidence interval; EMD = estimated mean difference; JI = justice involvement; MST = military sexual trauma; PCL-5 = PTSD Checklist for DSM-5; PHQ-8 = Patient Health Questionnaire-8; PR = prevalence ratio; SA = suicide attempt; SI = suicidal ideation.

^a p < .05.
^b p < .01.
^c p < .001.
^d p < .0001.

significantly associated with both the predictor variable and the outcome at the $p < .01$ level were included as covariates in the respective models.

3. Results

Among men, 72.86% ($n = 6944$) reported no history of homelessness or justice involvement, 8.29% ($n = 790$) reported a history of homelessness only, 12.65% ($n = 1206$) reported a history of justice involvement only, and 6.19% ($n = 590$) reported a history of both homelessness and justice involvement. Among women, 78.80% ($n = 4363$) reported no history of homelessness or justice involvement, 11.77% ($n = 652$) reported a history of homelessness only, 5.91% ($n = 327$) reported a history of justice involvement only, and 3.52% ($n = 195$) reported a history of both homelessness and justice involvement.

For both men and women veterans, lifetime history of homelessness, justice involvement, or both were all associated with more severe mental health symptoms, as well as increased report of suicidal ideation and attempt, when compared to those with no history of homelessness or justice involvement (see Table 3 [men] and Table 4 [women]). While strength of significance was attenuated when models were adjusted for covariates, including sociodemographics, military characteristics, and trauma (e.g., ACEs, MST), all aforementioned models maintained significance.

Risk for adverse mental health sequelae was exacerbated among those with lifetime histories of both homelessness and justice involvement (see Tables 3 and 4 and Supplementary Tables 1 and 2). The results demonstrating adverse mental health sequelae were consistent for the majority of unadjusted and adjusted models. Only the recent and lifetime suicidal ideation models were no longer significant among women Veterans with the inclusion of covariates.

In terms of magnitude of findings, men with histories of both homelessness and justice involvement reported more severe PTSD and depressive symptoms and were more likely to report lifetime opioid misuse, recent suicidal ideation, lifetime suicidal ideation, and lifetime suicide attempt, compared to those without a history of homelessness and justice involvement. Similarly, history of both homelessness and justice involvement were also associated with significantly poorer mental health symptoms and suicide risk compared to those with a history of homelessness or justice involvement alone. Among men, all models were significant except for alcohol misuse, such that men with a

history of homelessness did not significantly differ from those with a history of both homelessness and justice involvement.

Specific to women, those with histories of both homelessness and justice involvement reported more severe PTSD and depressive symptoms, and were more likely to report alcohol and opioid misuse, recent suicidal ideation, lifetime suicidal ideation, and lifetime suicide attempt, compared to women without a history of homelessness or justice involvement. When examining differences between women with a history of homelessness and justice involvement compared to those with homelessness or justice involvement alone, several differences were noted. Compared to those with a history of justice involvement, those with a history of both homelessness and justice involvement reported more severe PTSD and depressive symptoms and were more likely to report lifetime opioid misuse and suicide attempt. When compared to women with a history of homelessness alone, women with a history of both homelessness and justice involvement reported more severe PTSD and depressive symptoms and were more likely to report a lifetime suicide attempt. All other models were not significant.

4. Discussion

This is the first study to examine several mental health domains among a large, national sample of post-9/11 veterans who did and did not report a lifetime history of homelessness and/or justice involvement. Women and men with a lifetime history of both homelessness and justice involvement reported more severe PTSD, depression, and potential substance misuse, as well as recent and lifetime suicidal ideation and lifetime suicide attempt, compared to those without a history of homelessness and justice involvement. Those with a history of both homelessness and justice involvement reported more severe mental health symptoms and suicide risk, relative to those with a history of either homelessness or justice involvement alone. These findings suggest that exposure to both of these social determinants may contribute to adverse mental health sequelae among post-9/11 veterans – both for women and men.

The majority of adjusted analyses were congruent with unadjusted analyses, suggesting that although sociodemographics (e.g., race/ethnicity) and prior trauma, such as MST or ACEs, are associated with mental health outcomes, homelessness and justice involvement remain statistically significant contributors to self-reported mental health symptoms and suicidality. Homelessness and justice involvement are

Table 4
Mental health based on lifetime homelessness and justice involvement among women veterans.

Outcome	History of Homelessness and not JI		History of JI and not Homelessness		History of Homelessness and JI	
	Unadjusted EMD (95% CI)	Adjusted EMD (95% CI)	Unadjusted EMD (95% CI)	Adjusted EMD (95% CI)	Unadjusted EMD (95% CI)	Adjusted EMD (95% CI)
PCL-5	13.4 (11.3, 15.6) ^d	8.8 (6.7, 11.0) ^d	7.3 (4.5, 10.1) ^d	5.0 (2.3, 7.7) ^c	21.7 (17.3, 26.0) ^d	14.4 (10.3, 18.5) ^d
PHQ-8	3.6 (3.0, 4.3) ^d	2.2 (1.4, 2.9) ^d	1.6 (0.78, 2.5) ^c	0.87 (0.06, 1.7) ^a	6.3 (5.0, 7.6) ^d	4.0 (2.8, 5.3) ^d
	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)
Alcohol Misuse	1.07 (0.93, 1.23)	1.04 (0.90, 1.20)	1.28 (1.09, 1.50) ^b	1.27 (1.07, 1.51) ^b	1.29 (1.05, 1.57) ^a	1.28 (1.03, 1.57) ^a
Lifetime Opioid	2.34 (1.69, 3.24) ^d	1.68 (1.20, 2.36) ^b	4.28 (3.00, 6.12) ^d	3.84 (2.61, 5.64) ^d	4.35 (2.81, 6.70) ^d	3.31 (2.09, 5.26) ^d
Recent SI	2.64 (2.21, 3.14) ^d	2.04 (1.67, 2.48) ^d	1.97 (1.51, 2.59) ^d	1.73 (1.31, 2.29) ^c	3.16 (2.38, 4.20) ^d	2.10 (1.53, 2.88) ^d
Lifetime SI	1.72 (1.53, 1.94) ^d	1.29 (1.13, 1.47) ^c	1.48 (1.26, 1.75) ^d	1.26 (1.06, 1.50) ^b	2.12 (1.81, 2.49) ^d	1.45 (1.21, 1.73) ^d
Lifetime SA	3.24 (2.68, 3.92) ^d	2.33 (1.87, 2.92) ^d	2.59 (2.00, 3.37) ^d	2.17 (1.64, 2.87) ^d	5.03 (4.05, 6.24) ^d	3.33 (2.58, 4.30) ^d

Note. No history of homelessness nor JI is the reference group for all reported values. PCL-5 model adjusted for age, race/ethnicity, education, branch of service, MST, and ACEs; PHQ-8 model adjusted for race/ethnicity, education, branch of service, MST, and ACEs; alcohol misuse model adjusted for race/ethnicity, education, MST, and ACEs; lifetime opioid model adjusted for age, white non-Hispanic vs. Other, MST, and ACEs; recent SI, lifetime SI, and lifetime SA models adjusted for age, education, branch of service, MST, and ACEs. ACEs = adverse childhood experiences; JI = justice involvement; MST = military sexual trauma; PCL-5 = PTSD Checklist for DSM-5; PHQ-8 = Patient Health Questionnaire-8; PR = prevalence ratio; SA = suicide attempt; SI = suicidal ideation.

^a $p < .05$.

^b $p < .01$.

^c $p < .001$.

^d $p < .0001$.

important factors to address during clinical assessment; veterans who have experienced both may represent a particularly high-risk population in need of enhanced clinical attention and suicide prevention efforts.

These findings are particularly important given that the CHAI Research Study recruited a large, population-based sample of veterans independent of VHA utilization. Veterans who are not users of VHA care have traditionally been understudied despite being more likely to report experiencing homelessness and justice involvement (Holliday et al., 2021c; Seamone et al., 2014; VA, 2018). The VA research community has been integral to examining mental health outcomes, including suicidal self-directed violence, among veterans experiencing homelessness and justice involvement. However, conducting this research has been challenging given low base rates of these social factors and suicidal behavior. The study of homelessness and justice involvement among women veterans has proven especially difficult because they are a minority of the veteran population and experience homelessness and justice involvement at lower rates than men (Bureau of Justice Statistics, 2007; Department of Housing and Urban Development, 2021). This study provides the first large-scale examination of the association of justice involvement and homelessness with mental health among women veterans.

These findings suggest important considerations for both policy development and clinical care. Programming focused on linking homeless and justice involved veterans to health and social services is critical (e.g., Health Care for Re-entry Veterans Services; Veterans Homeless Programs; Finlay et al., 2014). In recognition of the association between justice involvement and homelessness, VHA already integrates programs focused on the needs of justice-involved veterans under the VHA Homeless Programs Office. However, many veterans with a history of homelessness and/or justice involvement are not eligible for VHA care or choose not to access VHA services. Additionally, upon release from incarceration veterans may find they do not qualify for all available homeless services (U.S. Government, 2011). Therefore, it is important to consider the implications of expanding access to services for justice involved veterans, as well as continuing to build and expand partnerships with community-based organizations. This should include enhancing access to health and social services in settings commonly accessed by these veterans (e.g., shelters, emergency departments, treatment courts). Early identification of veterans who have experienced both justice involvement and homelessness (e.g., first episode of homelessness; prior to release from incarceration) would provide an opportunity for intervention in a sub-population known to be at increased risk for severe mental health symptoms and suicide ideation and attempt.

Future research should focus on methods of tailoring evidence-based treatments (e.g., Prolonged Exposure therapy for those entering transitional housing after incarceration) to ensure optimal therapeutic outcomes for these at-risk veterans. These treatments can also be modified to include adjunctive interventions to address myriad psychosocial stressors frequently experienced by homeless and justice-involved veterans (e.g., unemployment; financial difficulties). Moreover, additional research focused on understanding factors impeding access and delivery of evidence-based interventions to these populations remains necessary.

Importantly, findings were largely consistent across both men and women in our sample. These results demonstrate that both homelessness and justice involvement universally impact veterans regardless of gender. Nonetheless, additional research specific to the social service and health care needs of men and women veterans experiencing these SDOH remains necessary. In particular, veterans who experience homelessness and justice involvement should be the focus of tailored efforts to engage and retain these veterans in VHA, as well as community-based services, to ensure optimal mental health care.

Several important limitations should be noted. First, only *lifetime* homelessness and justice involvement were assessed. Given the cross-sectional nature of this study, conclusions regarding direct associations between mental health, homelessness, and justice involvement (e.

g., if the suicide attempt preceded justice involvement) cannot be drawn. Future research should focus on better understanding the temporality (e.g., pre-military vs. post-military homelessness) and chronicity of these SDOH with mental health sequelae. Measurement of homelessness (i.e., “2 weeks or more”) and justice involvement (i.e., “go to jail”) as assessed in the survey may not have been sufficiently comprehensive for all veterans’ experience of homelessness and/or criminal justice involvement. Research should further investigate contextual factors related to homelessness (e.g., periods less than 2 weeks, sheltered vs. unsheltered) and justice involvement (e.g., prison, community supervision). Prior research has demonstrated the association between such contextual factors and mental health outcomes (Roncarati et al., 2020). Similarly, the experience of homelessness among women in our data may have been underrepresented. For example, women are often less visible in their experience of housing instability (e.g., “couch surfing”) relative to men (e.g., accessing a social service such as transitional housing or a shelter; Milaney et al., 2020). Elucidating the intersection of gender and these contextual factors upon mental health remains similarly important. Additionally, many mental health domains utilized screening instruments or were based on single-item assessments (i.e., lifetime opioid misuse; recent and lifetime suicidal ideation, lifetime suicide attempt). Finally, certain sociodemographic domains were combined to facilitate inferential analyses (e.g., race/ethnicity); therefore, specifically focusing on recruitment of diverse populations among those who have experienced homelessness and/or justice involvement in future research may yield additional insight.

Although homelessness and justice involvement adversely affect mental health independently, our findings suggest that the combined lifetime experience of both may be particularly deleterious. Specifically, men and women veterans with a lifetime history of both homelessness and justice involvement were at greater risk for PTSD, depression, substance use, and suicidal ideation and attempt, relative to those without a history of these SDOH. Increasing access to evidence-based health and social services among veterans experiencing housing instability and justice involvement, both within and outside VHA, remains paramount.

Author statement

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Declaration of competing interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jpsychires.2021.11.007>.

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