Posttraumatic Stress Disorder in US Military Veterans: Results From the 2019–2020 National Health and Resilience in Veterans Study

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ABSTRACT

Objective: The US military veteran population is changing rapidly, and contemporary data on the prevalence of *DSM-5* posttraumatic stress disorder (PTSD) are lacking. The *DSM-5* clarified PTSD Criterion A to delineate direct and indirect trauma exposures, but effects on the conditional probability of PTSD and functional impairment remain unknown. The objectives of this study were to provide contemporary estimates of PTSD prevalence and conditional probabilities in the US military veteran population, determine the likelihood of developing PTSD following direct versus indirect exposures to potentially traumatic events (PTEs), and examine the effects of direct and indirect PTEs and PTSD on functional impairment.

Methods: Data were analyzed from the 2019–2020 National Health and Resilience in Veterans Study (NHRVS), an online survey of a nationally representative sample of US military veterans conducted from November 2019 to March 2020 (median completion date: November 21, 2019). Trauma exposures were assessed with the Life Events Checklist-5 and PTSD with the PTSD Checklist for *DSM-5*.

Results: The weighted prevalence of lifetime PTSD was 9.4% (95% CI, 8.5%–10.3%) and of past-month PTSD was 5.0% (95% CI, 4.3%–5.7%). Direct PTEs were associated with increased odds of lifetime (odds ratio [OR] = 1.36; 95% CI, 1.30–1.42) and past-month PTSD (OR = 1.38; 95% CI, 1.31–1.46), but indirect PTEs were not (lifetime OR = 1.01; 95% CI, 1.00–1.03; past-month OR = 0.99; 95% CI, 0.97–1.00). Both PTSD (unstandardized B = 6.11, SE = 0.35) and direct PTEs (unstandardized B = 0.13, SE = 0.04), but not indirect PTEs, were significantly associated with functional impairment after adjustment for demographic and psychiatric variables.

Conclusions: The prevalence of lifetime PTSD in US military veterans (9.4%) is slightly higher than 2016 estimates (6.9%–8.1%). Direct and indirect PTEs are prevalent in US military veterans, with only direct PTEs associated with higher conditional probability of past-month PTSD and greater functional impairment.

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Posttraumatic stress disorder (PTSD) is a prevalent psychiatric disorder among US military veterans that poses a significant public health burden. Recent estimates from nationally representative samples of US military veterans indicate that past-month PTSD prevalence estimates are 4.7%–4.8%, with lifetime PTSD prevalence estimates of 6.9%–8.1%.[1–3] The prevalence of PTSD is higher among veterans than in the general US population, in which the lifetime PTSD prevalence is estimated at 6.1%–6.8%.[4–6] The most recent data on the epidemiology of PTSD in veterans were published in 2016.[2,3] Because the demographic composition of the US military veteran population is rapidly changing (eg, increasing age, declining population, and greater proportion of female veterans[3]), there is a need for an updated prevalence in a contemporary sample.

Military veterans may be at heightened risk of PTSD due to the unique occupational risk of combat, and combat-related PTSD is a frequent focus of research in this population.[7] However, veterans are often exposed to a much broader range of potentially traumatic events (PTEs) before, during, or after their military service.[1–3] Recent epidemiologic estimates indicate that veterans are exposed to approximately 3 unique PTE types on average, with sudden death of a loved one, witnessing death or injury, and natural disasters or fire being most frequently reported.[1,2] The conditional probability of PTSD also varies by PTE type, with sexual assault and combat exposure being associated with particularly high risk for lifetime PTSD.[1,2] Conditional probability of PTSD may vary not only by trauma type, but also by type of exposure. The *DSM-5* recognizes 4 distinct types of PTE exposure in PTSD Criterion A: being directly exposed, or being indirectly exposed by either witnessing a trauma happen to someone else, learning about the trauma happening to a close friend or family member, or being exposed to aversive details through one's work. Direct exposures tend to be associated with higher probability of PTSD compared with indirect exposures,[8,9] but epidemiologic data on the conditional probability of PTSD following direct versus indirect exposures in population-based samples of US military veterans are lacking.

PTSD also poses a significant public health burden due to the functional impairment associated with this disorder. In the general US population, PTSD is associated

Clinical Points

- Posttraumatic stress disorder (PTSD) is a prevalent disorder in US military veterans, affecting 9.4% of the population, or more than 1.7 million veterans in their lifetimes.
- Direct trauma exposures are more likely than indirect traumas to lead to PTSD and psychosocial difficulties.
- Direct trauma exposures are linked to psychosocial difficulties in veterans, irrespective of whether they meet full criteria for PTSD.

with occupational and social impairment at levels similar to or greater than those of other psychiatric disorders,[10] and many studies have documented PTSD-related impairment among military veterans across multiple domains.[11] Trauma exposure in and of itself is additionally associated with functional impairment, even among individuals with subthreshold symptom levels of PTSD or other psychiatric disorders,[12–14] but the extent to which direct and indirect PTE exposures are differentially associated with functional impairment, after adjustment for PTSD and other psychiatric comorbidities, has yet to be examined.

To address the aforementioned gaps, the goals of this study were to (1) provide an updated estimate of the prevalence of *DSM-5* PTSD in the US military veteran population, (2) compare conditional probabilities of PTSD based on PTE type and *DSM-5* PTSD Criterion A exposure type, (3) determine the likelihood of developing PTSD following direct versus indirect PTE exposures, and (4) examine the effects of direct and indirect PTE exposure and PTSD on psychosocial functional impairment.

METHODS

Participants

We analyzed data from the 2019–2020 National Health and Resilience in Veterans Study (NHRVS), which surveyed a nationally representative sample of 4,069 US military veterans conducted from November 2019 to March 2020 (median completion date: November 21, 2019). Veterans completed an anonymous, web-based survey. The NHRVS sample was drawn from KnowledgePanel, a survey research panel of more than 50,000 households maintained by research firm Ipsos. KnowledgePanel is a probability-based survey panel of a representative sample of US adults that covers approximately 98% of US households. Panel members are recruited through national random samples, originally by telephone and now almost entirely by postal mail. To permit generalizability of results to the entire US veteran population, Ipsos computed post-stratification weights using the following benchmark distributions of US veterans from the most recent (August 2019) Current Veteran Population Supplemental Survey of the Census Bureau's American Community Survey: age, sex, race/ethnicity, metropolitan status, education, household income, branch of service, and years in service.[15] An iterative proportional fitting (raking) procedure was used to produce the final post-stratification weights. Participants provided informed consent, and the study was approved by the Human Subjects Subcommittee of the VA Connecticut Healthcare System.

Measures

Demographics. Participants answered a demographic questionnaire that assessed age, sex, race/ethnicity, current marital status, annual household income, employment status, military branch, years of service, use of VA health care services, and combat veteran status.

Life Events Checklist-5 (LEC-5). The LEC-5[16] was used to assess exposure to 17 PTE types. For each PTE type, participants are asked to indicate their exposure type (whether the event "happened to me" or they "witnessed it" or "learned about it happening to close family or friend" and/or were "exposed to it as part of my job"). Individuals can endorse more than 1 exposure type for each PTE type. For analyses of conditional probability of PTSD, disaster/accident was defined as endorsement of any of 5 items (natural disaster, fire or explosion, transportation accident, other serious accident, or exposure to toxic substance); interpersonal violence was defined as any of 4 items (physical assault, assault with a weapon, sexual assault, or other unwanted sexual activity); combat or captivity was defined with those 2 respective items; illness/injury was defined as any of 4 items (life-threatening illness or injury, severe human suffering, sudden violent death, or sudden accidental death); and serious injury, harm, or death you caused to someone else was defined by a single item. Direct exposures were defined as endorsement of "happened to me" and indirect exposures were defined as any other exposure type. Cumulative direct trauma burden was calculated as the total number of direct trauma exposures to any trauma type (with a possible range of 0 to 17), and cumulative indirect trauma burden was calculated as the total number of indirect trauma exposures (with a possible range of 0 to 51).

PTSD Checklist for* DSM-5 *(PCL-5). The PCL-5[17] is a 20-item self-report measure of *DSM-5* PTSD symptoms experienced in the past month. Each symptom is rated on a 5-point Likert scale from 0 (not at all) to 4 (extremely), in relation to an individual's "worst" PTE indicated on the LEC-5. For this study, the PCL-5 was modified to include both lifetime and past-month ratings by asking participants to make separate ratings for how much each symptom bothered them "ever in your lifetime" and "in the past month." If participants reported no history of PTEs on the LEC-5, they were classified as having no lifetime or past-month PTSD. Lifetime and past-month PCL-5 scores were missing from 126 individuals (3.2%); these participants were excluded from lifetime and past-month analyses. A cutpoint of 38 was chosen to classify participants as having PTSD; past research has shown that cutpoints of 33–39 correspond well with 50 on the *DSM-IV* version of the PCL,[18] which is recommended for population-based estimates for PTSD prevalence.[19] Within the range of 33–39 on the PCL-5, prior studies have specifically recommended using either 36[18] or 38.[20] We selected the more conservative cutpoint of 38,

Table 1. Sample Characteristics (N = 4,069) in Comparison With Contemporaneous US Census Benchmarks for US Veterans (N = 1,837,665)

Variable	2019–2020 NHRVS, Weighted %	Veterans in 2019 CPS Supplement, %[a]
Sex, male	90.3	90.3
Age, y		
18–44	17.5	19.4
45–59	23.4	22.9
60–69	20.3	19.8
70–79	24.8	24.1
80+	14.0	13.8
Race/ethnicity		
White, non-Hispanic	78.1	78.0
Black, non-Hispanic	11.2	11.3
Other, non-Hispanic	2.8	2.7
Hispanic	6.4	6.6
2+ race, non-Hispanic	1.4	1.4
Education		
High school/less than high school	30.6	31.6
Some college	36.9	36.3
Bachelor's degree or higher	32.4	32.1
Income		
Under $25,000	10.7	10.9
$25,000–$49,999	19.1	18.9
$50,000–$74,999	19.4	19.3
$75,000–$99,999	15.2	15.0
$100,000–$149,999	18.6	18.4
$150,000+	17.0	17.5
Military branch		
Air Force	18.9	18.6
Army	47.0	47.5
Coast Guard/Marine/other	14.0	13.8
Navy	20.1	20.1
Military service, years served		
Less than 2	12.8	12.9
2–3	28.9	28.8
4–9	41.5	41.6
10+	16.8	16.8
Combat veteran[b]		
Served in a combat or war zone	34.9	…
Veteran Affairs (VA) health care status[b]		
VA is primary source of health care	20.5	…

[a]Data from the US Census Bureau.[15]
[b]Combat veteran status and VA coverage not available for CPS.
Abbreviations: CPS = Current Population Survey, NHRVS = National Health and Resilience in Veterans Survey, VA = US Department of Veterans Affairs.

which also offers the advantage of allowing direct comparison with the most recent population-based estimate of PTSD prevalence using the PCL-5 in the US veteran population, which also used a cutpoint of 38.[2] The PCL-5 has been shown to have good psychometric validity in past research[21] and had excellent internal consistency in this study (in the current sample, Cronbach α = .96 for both lifetime and past-month versions of the PCL-5).

Psychiatric comorbidities. Lifetime major depressive disorder (MDD), alcohol use disorder (AUD), and drug use disorder (DUD) were assessed using a modified self-report version of the Mini-International Neuropsychiatric Interview (MINI) for *DSM-5*.[22]

Brief Inventory of Psychosocial Functioning (B-IPF). The B-IPF is a 7-item self-report measure that assesses functional impairment over the past 30 days in romantic relationships, parenting, family relationships, friendship and socializing, work, education, and self-care.[23] Responses are on a 7-point Likert scale (0 = "Never," 1–5 = "Sometimes," 6 = "Always," or "Not Applicable"). Scores on applicable items are summed, divided by the total possible score, and multiplied by 100 to yield a 0%–100% range. Past research has shown strong psychometric properties[23]; internal consistency in the current sample was α = .85.

Data Analyses

Data analyses proceeded in 5 steps. First, we computed the prevalence of lifetime and past-month PTSD in the full sample and by sociodemographic characteristics (age, sex, and race). Second, we calculated prevalence of exposure to different PTE types at different exposure levels (any, direct, witnessed, learned about, or exposed as part of job). Third, we examined the conditional probability of lifetime and past-month PTSD, given any, direct, or indirect exposure to different PTE types. Fourth, we conducted multivariable logistic regressions examining cumulative direct and indirect trauma burden as predictors of lifetime and past-month PTSD, adjusting for sociodemographic correlates (age, sex, race, military branch). Fifth, we conducted a series of linear regressions examining direct trauma burden, indirect trauma burden, and lifetime PTSD as predictors of overall and 7 separate domains of psychosocial functional impairment, adjusted for sociodemographic correlates and lifetime psychiatric comorbidities (ie, major depressive, alcohol use, and drug use disorders). All raw frequencies are unweighted; all percentages and inferential statistics are weighted to be representative of the US military veteran population.

RESULTS

Table 1 provides demographic and military characteristics of this sample and contemporaneous US Census data for military veterans. A total of 9.4% (SE = 0.5; 95% CI, 8.5%–10.3%) screened positive for lifetime PTSD and 5.0% (SE = 0.4; 95% CI, 4.3%–5.7%) for past-month PTSD. Both lifetime and past-month prevalence of PTSD were higher among female, younger, and non-White veterans (see Table 2). Nearly all veterans in the sample (n = 3,847, 93.4%) reported exposure to at least 1 PTE; prevalence of PTSD among the subsample of trauma-exposed veterans was 10.0% (SE = 0.5) for lifetime PTSD and 5.3% (SE = 0.4) for past-month PTSD. See Supplementary Table 1 for prevalences of PTSD using different PCL-5 cutpoints.

Table 3 presents prevalence of PTEs by PTE type and exposure type. On average, veterans reported 8.9 (SD = 8.5) exposures (out of 68 possible PTE type ([17]) by exposure type ([4]) combinations), with direct exposures being the most commonly endorsed (mean = 3.2, SD = 3.5), followed by exposures that veterans witnessed (mean = 2.3, SD = 2.8) or learned about (mean = 2.4, SD = 3.5) and exposures that occurred as a part of one's job (mean = 1.1, SD = 2.5). Transportation accidents

Table 2. Prevalence of *DSM-5* PTSD in the Full Sample (n = 3,943) and Demographic-Based Cohorts[a]

Variable	Raw Frequency, n		Weighted Percentages, % (SE)	
	Lifetime PTSD	Past-Month PTSD	Lifetime PTSD	Past Month PTSD
Overall	317	161	9.4 (0.5)	5.0 (0.3)
Sex				
Female	102	43	24.2 (2.3)	11.2 (1.6)
Male	215	118	7.7 (0.5)	4.3 (0.3)
Age, y				
18–44	69	32	21.9 (1.6)	11.1 (1.2)
45–59	109	61	12.8 (1.1)	7.8 (0.9)
≥ 60	139	68	4.0 (0.4)	1.9 (0.3)
Race/ethnicity				
White	216	105	8.2 (0.5)	4.3 (0.4)
Non-White	101	56	13.4 (1.2)	7.3 (0.9)
Primary health care source[b]				
VA	149	83	23.1 (1.5)	12.8 (1.2)
Non-VA	43	23	7.4 (1.2)	3.6 (0.9)

[a]PTSD was operationalized as score of 38 or higher on the PCL-5. Lifetime PTSD refers to any lifetime PTSD; past-month PTSD refers to PTSD within the past month. Lifetime and past-month PCL-5 scores were missing for 126 participants. Raw frequencies are reported; percentages and standard errors (SEs) of percentages were calculated using post-stratification weights to permit generalizability to the US veteran population.
[b]Based on responses to the question, "Is the VA your main source of health care?"
Abbreviations: *DSM-5* = *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition; PCL-5=PTSD Checklist-5; PTSD = posttraumatic stress disorder; VA = US Department of Veterans Affairs.

Table 3. Potentially Traumatic Event Exposure by Trauma Type and Exposure Type (N = 4,069)[a]

Variable	Any Exposure	Direct Exposure	Witnessed	Learned About	Part of My Job	Endorsed as Worst Trauma
Trauma Type						
Transportation accident	3,118 (81.8)	2,491 (64.1)	1,050 (28.2)	657 (17.4)	282 (7.6)	575 (15.7)
Natural disaster	2,967 (71.7)	1,934 (45.9)	1,154 (29.0)	722 (17.2)	282 (6.8)	481 (11.8)
Fire or explosion	1,952 (51.9)	707 (19.3)	957 (25.8)	555 (14.8)	322 (8.5)	158 (4.3)
Combat	2,002 (49.4)	1,140 (28.7)	419 (11.4)	778 (18.6)	486 (12.6)	442 (11.9)
Sudden accidental death	1,935 (48.0)	…	736 (18.9)	1,155 (27.8)	329 (8.5)	284 (7.7)
Other serious accident	1,825 (47.2)	886 (23.2)	674 (17.0)	574 (14.9)	255 (6.4)	211 (5.2)
Life-threatening illness or injury	1,924 (46.6)	1,027 (23.8)	821 (19.8)	569 (15.1)	197 (4.8)	452 (10.6)
Physical assault	1,730 (45.3)	1,206 (32.0)	601 (16.5)	475 (12.0)	204 (5.8)	168 (4.5)
Sudden violent death	1,686 (42.9)	…	582 (15.4)	1,064 (26.2)	319 (8.4)	216 (6.3)
Other	1,406 (36.8)	944 (24.1)	459 (12.6)	407 (10.6)	278 (7.8)	242 (5.8)
Exposure to toxin	1,382 (36.2)	801 (21.1)	214 (6.2)	370 (9.7)	522 (13.7)	99 (2.3)
Assault with weapon	1,254 (34.4)	702 (19.3)	321 (9.8)	463 (12.4)	269 (7.3)	106 (3.2)
Severe human suffering	1,373 (34.3)	119 (3.3)	769 (19.6)	656 (16.1)	246 (5.7)	100 (2.2)
Other unwanted sexual experience	888 (23.3)	532 (13.7)	102 (2.9)	396 (10.7)	89 (2.3)	60 (1.9)
Sexual assault	785 (20.9)	295 (7.5)	47 (1.3)	508 (14.0)	102 (2.7)	149 (3.6)
Serious injury, harm, or death you caused to someone else	561 (17.2)	188 (5.0)	202 (6.4)	206 (6.2)	180 (5.5)	33 (0.7)
Captivity	391 (12.2)	49 (1.1)	33 (1.0)	320 (10.3)	58 (1.9)	6 (0.1)
Severity of Exposure						
Trauma exposures, mean (SD)	8.9 (8.5)	3.2 (2.5)	2.3 (2.8)	2.4 (3.5)	1.1 (2.5)	…

[a]Values shown are raw frequencies (weighted %) of trauma exposure, by exposure type, unless otherwise noted.

(81.8%) and natural disasters (71.7%) were the most frequently endorsed PTEs; serious injury/harm/death you caused to someone else (17.2%) and captivity (12.2%) were the least frequently endorsed. In terms of PTE type endorsed as the index (or "worst") trauma, transportation accident was most frequently endorsed (15.7%), followed by combat (11.9%) and natural disasters (11.8%). Serious injury/harm/death you caused to someone else (0.7%) and captivity (0.1%) were the least frequently endorsed.

Table 4 presents probabilities of lifetime and past-month PTSD conditional on any, direct, or indirect exposure to different PTE types. For these analyses, indirect exposure was defined as any exposure that was witnessed, learned about, or experienced as part of a job. Serious harm, injury, or death you caused to someone else had the largest conditional probability of both lifetime (22.2%) and past-month (11.3%) PTSD, with disaster/accident having the lowest (10.2% lifetime, 5.4% past-month). Conditional probability

Table 4. Conditional Probability of Posttraumatic Stress Disorder (PTSD)[a]

Trauma Type	Probability of Lifetime PTSD, %			Probability of Past-Month PTSD, %		
	Conditional on Any Exposure	Conditional on Direct Exposure	Conditional on Indirect Exposure[b]	Conditional on Any Exposure	Conditional on Direct Exposure	Conditional on Indirect Exposure[b]
Harm you caused someone else	22.2	22.7	22.3	11.3	16.2	10.9
Interpersonal violence	15.1	17.5	14.1	8.0	9.3	6.7
Combat/captivity	12.7	14.8	13.2	7.0	8.3	7.0
Illness/death	11.5	12.9	12.2	5.9	7.5	6.1
Disaster/accident	10.2	10.8	10.9	5.4	6.0	5.7

[a]All percentages are weighted (total n = 3,943).
[b]Indirect exposure combines witnessed, learned about, or exposed as part of job.

Table 5. Trauma Exposure, PTSD, and Functional Impairment[a]

Variable	Overall	Romantic	Parenting	Family	Friendship	Work	Education	Self-Care
Direct PTEs	0.13 ± 0.04**	0.01 ± 0.01*	0.02 ± 0.01*	0.02 ± 0.01*	0.01 ± 0.01	0.01 ± 0.01	0.00 ± 0.01	0.05 ± 0.01**
Indirect PTEs	0.01 ± 0.01	0.01 ± 0.00*	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00	0.01 ± 0.00*	0.00 ± 0.00	0.00 ± 0.00
Lifetime PTSD	6.11 ± 0.35**	1.08 ± 0.09**	0.73 ± 0.07**	1.06 ± 0.08**	1.13 ± 0.07**	0.51 ± 0.06**	0.71 ± 0.05**	1.00 ± 0.08**

[a]Values are shown as B ± SE. All coefficients are adjusted for age, sex, race, military branch, major depression, alcohol use disorder, and drug use disorder. Participants were given the option to select "not applicable" for psychosocial impairment domains not relevant to them; participants from whom data are unavailable were dropped from analyses.
*$P < .05$.
**$P < .001$.
Abbreviations: B = unstandardized coefficient, PTE = potentially traumatic event, PTSD = posttraumatic stress disorder, SE = standard error.

of lifetime PTSD was higher for direct than for indirect PTEs for 2 PTE types (interpersonal violence and combat/captivity), and conditional probability of past-month PTSD was higher for all direct PTEs than for indirect PTEs. We also ran a logistic regression examining the cumulative burden of direct PTEs and indirect PTEs on odds of PTSD diagnosis, controlling for sociodemographic variables (age, sex, race/ethnicity, military branch). We found that the number of direct PTE exposures was associated with significantly increased odds of both lifetime (OR = 1.36; 95% CI, 1.30–1.42) and past-month (OR = 1.38; 95% CI, 1.31–1.46) PTSD. In contrast, the number of indirect PTE exposures was not associated with either lifetime (OR = 1.01; 95% CI, 1.00–1.03) or past-month (OR = 0.99; 95% CI, 0.97–1.00) PTSD.

Finally, we ran linear regressions examining associations between direct PTEs, indirect PTEs, and lifetime PTSD on past-month functional impairment, adjusting for the same sociodemographic variables and lifetime psychiatric comorbidity (major depressive, alcohol use, and drug use disorders; see Table 5). PTSD was significantly associated with overall functional impairment and impairment in each of the 7 functional domains. Direct PTEs were significantly associated with overall impairment and impairment in 4 domains (romantic, parenting, family, and self-care), whereas indirect PTEs were significantly associated with impairment in only 2 domains (romantic and work). We examined the possibility that subthreshold PTSD symptoms might explain the association between direct PTEs and functional impairment by re-running the analysis with total lifetime PCL-5 scores, which capture variability in both subclinical and clinically significant PTSD symptoms, instead of lifetime PTSD status. After adjustment for total PCL-5 scores, the effect of direct PTEs on overall functional impairment was no longer significant (B = –0.05, SE = 0.04, $P = .24$).

DISCUSSION

In a contemporary nationally representative sample of US military veterans, the prevalence of lifetime PTSD was 9.4%, which is slightly higher than prior estimates of 6.9%–8.1% using similar sampling and assessment methods in veterans[1–3] and higher than the prevalence previously reported in large national samples of adults (6.1%–6.8%).[4–6] Using US Census Bureau benchmarks of the US veteran population,[15] our data suggest that more than 1.7 million US veterans may be affected by PTSD in their lifetimes. The prevalence of past-month PTSD was 5.0%, which is similar to prior estimates[1,2] and suggests that more than 900,000 US veterans are currently living with PTSD. Analyses stratified by sex, age, and race revealed significantly higher prevalence of both lifetime and past-month PTSD among female, younger, and non-White veterans, consistent with prior studies.[1,2,6]

There was a high prevalence of PTE exposure in our sample, with nearly all veterans (93.4%) reporting at least one exposure. With respect to PTE types, the most frequently endorsed were transportation accidents and natural disasters. This stands in contrast to our prior studies in national samples of veterans,[1,2] which found that "sudden death of a close family member or friend" was the most frequently endorsed PTE type, as well as to prior findings in general population samples.[4] This discrepancy is likely due to our use of a *DSM-5*–referenced PTE measure (LEC-5) and the change in *DSM-5* that sudden death of a loved one must be violent or accidental to fulfill PTSD Criterion A

(assessed by the LEC-5 with 2 items: "sudden violent death [for example, homicide, suicide]" and "sudden accidental death"). In comparing these results to our prior studies using the broader definition of sudden death, our findings indicate that this change in *DSM-5* reduced the frequency of endorsement of this PTE type from 61.3%–61.9%[1,2] to 42.9% who endorsed exposure to a sudden violent death and 48.0% to a sudden accidental death (53.6% to at least 1 of sudden violent and/or accidental death).

Overall, with respect to frequency of endorsement of *DSM-5* exposure type, veterans were likely to endorse both direct and indirect PTEs. Consistent with prior studies, conditional probability of past-month PTSD was higher for direct than for indirect exposure for all PTE types,[8,9] and only the number of direct PTEs, but not indirect PTEs, was significantly associated with increased odds of PTSD. Notably, the PTE type "harm you caused someone else" had the highest conditional probability of PTSD, even though it was the least endorsed. Thus, although veterans are less likely to experience this kind of PTE relative to other PTE types, they are at especially high risk of PTSD if they do experience it. This finding is consistent with prior work suggesting that killing in combat and moral injury are associated with particularly high PTSD prevalence.[24,25] Future research should examine whether guilt explains the heightened conditional probability for PTSD following this PTE.[26,27] Taken together, these findings suggest that direct and indirect PTEs are prevalent in the US veteran population. They further suggest that veterans exposed to direct PTEs, particularly causing harm to others, are especially vulnerable to developing PTSD.

Consistent with the broader literature, PTSD was associated with psychosocial functional impairment across all domains.[11,28] Additionally, exposure to direct PTEs was associated with more domains of impairment than exposure to indirect PTEs. These findings extend prior work on PTSD and functional impairment in veterans[11,28] by demonstrating that PTE exposure itself (at least direct PTEs) explains additional variance in functional impairment, even after adjusting for PTSD and other psychiatric disorders, possibly due to subthreshold PTSD symptoms or other trauma-related sequelae. In fact, post hoc analyses indicated that the effect of direct PTEs on overall functional impairment was no longer significant after adjustment for severity of lifetime PTSD symptoms, which includes subclinical as well as clinically significant PTSD symptoms. This finding underscores the importance of considering subclinical PTSD symptoms as well as PTSD in the assessment, monitoring, and treatment of psychosocial difficulties in veterans.

Study findings should be interpreted in the context of the study's limitations. First, this study is a cross-sectional, retrospective study that relied on self-report measures of PTEs, PTSD symptoms, and functional impairment. Even though the PCL-5 is a well-validated measure of PTSD, diagnostic interviews are preferable for diagnostic assessments. Second, we selected a conservative PCL-5 cutpoint of 38 for PTSD, although some studies recommend the lower cutpoint of 33.[29] We selected a more conservative cutpoint because cutpoints are highly sensitive to base rates, population prevalence estimates are frequently overestimated when using cutpoints derived from clinical samples,[19] and the cutpoint of 33 was identified in a sample with a much higher base rate of PTSD (61%)[29] than general population estimates (6.1%–8.1%).[1–6] Our choice of cutpoint also facilitated comparisons with prior research using the same PCL-5 cutpoint.[2] Third, most veterans reported exposure to both direct and indirect PTEs, so there is likely overlap in endorsements of direct and indirect exposures to potentially traumatic events.

Despite these limitations, this study extends prior literature in several ways. First, our findings provide an updated estimate of population prevalence of *DSM-5* PTSD in a large, contemporary, nationally representative sample of US military veterans, enhancing generalizability to the entire US veteran population. Second, our results extend prior work by showing that both direct and indirect PTEs are prevalent in military veterans, with direct PTE exposures associated with higher conditional probability of past-month PTSD and more functional impairment relative to indirect PTEs. The fact that indirect PTEs were not associated with either PTSD or functional impairment after adjustment for covariates—including direct PTE exposure—calls into question the clinical relevance of indirect PTE exposures. Third, the finding that direct PTE exposure was associated with functional impairment even after controlling for PTSD and other psychiatric comorbidities suggests that veterans directly exposed to PTEs may benefit from intervention even if they do not meet full diagnostic criteria for PTSD or another disorder, particularly if they evidence subthreshold PTSD symptoms. Further research is needed to replicate these findings using structured interviews, evaluate the burden of subthreshold PTSD, and evaluate the efficacy of interventions designed to mitigate the deleterious effects of PTSD and exposure to direct PTEs on functioning in this and other populations.

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Supplementary Material

Article Title: Posttraumatic Stress Disorder in US Military Veterans: Results From the 2019–2020 National Health and Resilience in Veterans Study

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List of Supplementary Material for the article

1. Table 1 — Prevalence of DSM-5 PTSD in the National Health and Resilience in Veterans (NHRVS 2019-2020) Using Different PCL-5 Cutpoints

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Supplementary Table 1. Prevalence of DSM-5 PTSD in the National Health and Resilience in Veterans (NHRVS 2019-2020) Using Different PCL-5 Cutpoints

PCL-5 Cutpoint	NHRVS Sample (n = 4,069)					
	Raw Frequencies		Weighted Percentages			
	Lifetime PTSD[a]	Past Month PTSD	Lifetime PTSD		Past Month PTSD	
	n	n	%	SE	%	SE
33	442	217	12.7	0.5	6.6	0.4
34	441	203	12.1	0.5	6.1	0.4
35	375	192	11.0	0.5	5.9	0.4
36	347	178	10.1	0.5	5.5	0.4
37	336	167	9.7	0.5	5.2	0.4
38	317	161	9.4	0.5	5.0	0.3
39	303	152	9.0	0.5	4.6	0.3

Abbreviations: DSM-5 = Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; PCL-5 = PTSD Checklist-5; PTSD = posttraumatic stress disorder; SE=standard error.

[a]PTSD was operationalized using the cutpoints 33-39 on the PCL-5. Lifetime PTSD refers to any lifetime PTSD; past month PTSD refers to PTSD within the past month. Lifetime and past-month PCL-5 scores were missing for 126 participants. Raw frequencies are reported; percentages and standard errors of percentages were calculated using post-stratification weights to permit generalizability to the US Veteran population.