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Prevalence of post-traumatic stress disorder in the United States: a systematic literature review

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ABSTRACT

Objective: This study synthesized evidence regarding the prevalence of post-traumatic stress disorder (PTSD) in the United States (US).

Methods: A systematic literature review (SLR) identified recently published (2015–2019) observational studies of PTSD prevalence in the US *via* the MEDLINE, EMBASE, and PsycINFO databases. Eligible studies' most recent data were collected no earlier than 2013. Data elements extracted included study design, sample size, location, data source/year(s), study population(s), traumatic event type, prevalence estimates with corresponding look-back periods, and clinical metrics.

Results: Data from 38 identified articles were categorized by population, diagnostic criteria, and look-back period. Among civilians, point prevalence ranged from 8.0% to 56.7%, 1-year prevalence from 2.3% to 9.1%, and lifetime prevalence from 3.4% to 26.9%. In military populations, point prevalence ranged from 1.2% to 87.5%, 1-year prevalence from 6.7% to 50.2%, and lifetime prevalence from 7.7% to 17.0%. Within these ranges, several estimates were derived from relatively high quality data; these articles are highlighted in the review. Prevalence was elevated in subpopulations including emergency responders, refugees, American Indian/Alaska Natives, individuals with heavy substance use, individuals with a past suicide attempt, trans-masculine individuals, and women with prior military sexual trauma. Female sex, lower income, younger age, and behavioral health conditions were identified as risk factors for PTSD.

Conclusions: PTSD prevalence estimates varied widely, partly due to different study designs, populations, and methodologies, and recent nationally representative estimates were lacking. Efforts to increase PTSD screening and improve disease awareness may allow for a better detection and management of PTSD.

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Post-traumatic stress disorder; prevalence; risk factors; systematic literature review

Introduction

Post-traumatic stress disorder (PTSD) is a possible psychopathological consequence of exposure to a traumatic event that threatens one's psychological and/or physical integrity^{1–3}. Individuals with PTSD may recurrently experience memories, sensations, and emotions of a traumatic event through sensory flashbacks or nightmares, or experience avoidance, irritability, hypervigilance, difficulty sleeping, poor concentration, or emotional withdrawal³. Additionally, PTSD is associated with higher risk of suicide and suicidal ideation^{4–6}, as well as other negative clinical outcomes such as persistent post-traumatic headache^{7–9} and disrupted sensory filtering^{10,11}. In the United States (US), it is estimated that over 80% of the population will be exposed to a traumatic event at some point¹², and that over 8% of those exposed will subsequently develop PTSD¹³.

PTSD is a heterogeneous condition in terms of clinical course and presentation, which creates challenges for estimating its prevalence. A wide variety of traumatic events may cause PTSD^{14,15}, and the type of traumatic event can influence the clinical course of the disorder (e.g. immediate vs. delayed onset, chronic vs. non-chronic)^{16–18}. The variable course of PTSD further complicates prevalence assessment, as the use of different look-back periods can substantially alter estimates. Furthermore, the likelihood of developing PTSD following exposure to a given traumatic event may be influenced by the presence of risk factors (e.g. pre-existing mental disorders) that predispose them to this disorder^{19–22}. Lastly, PTSD is an underdiagnosed clinical entity in part due to a lack of awareness in the general population, stigma, and barriers to healthcare access^{3,23,24}, and it is often misdiagnosed due to coexisting mental health conditions (e.g. depressive and anxiety disorders)²⁵.

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As a result of these complicating factors, a comprehensive and methodical analysis is needed to better understand the epidemiology of PTSD within the US population. To this end, we conducted a systematic literature review (SLR) to identify recently published articles about the prevalence of PTSD in the US and synthesized the available evidence, with a focus on estimates that may be broadly representative of the US general population as well as key subpopulations.

Methods

Study selection

A SLR was conducted to identify relevant studies published in the English-language literature using the MEDLINE, EMBASE, and PsycINFO databases (see [Supplementary Methods](#) for the details of the databases searched). The search was designed, performed, and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines²⁶ (Figure 1).

Study inclusion and exclusion criteria following the standard Population Intervention Comparison Outputs Study (PICOS) elements (see more details in [Supplemental Table 1](#)) were as follows: (1) study population limited to or inclusive of the US; (2) included adults with traumatic event exposure or PTSD diagnosis, or reported prevalence of PTSD or risk factors associated with the development of PTSD; (3) observational study design, including prospective and retrospective studies; and (4) articles published on or after 2015, with the most recent data collected no earlier than 2013. The last criterion was imposed to capture the most up-to-date data and to reduce reporting and methodological heterogeneity, as the diagnostic criteria of PTSD were revised in 2013 in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)²⁷.

All titles/abstracts of studies identified through the database search were screened, and those not meeting the inclusion/exclusion criteria were excluded. For the remaining studies, full-text publications were retrieved and screened. Full-texts were reviewed manually by two independent experienced reviewers, and any disagreements in categorization between the two reviewers were resolved through consensus by a third reviewer. A PRISMA diagram was generated to describe the study selection process, reasons for exclusion per level of screening, and the number of articles selected for inclusion/exclusion and associated reasons (for excluded articles only) after two levels of screening.

Data extraction

For studies meeting the inclusion criteria based on full-text review, the following data elements were extracted (contingent on availability): study design (e.g. prospective or retrospective); sample size; geographic location; data source and year(s) of data collection; study population (i.e. civilian or military) and subpopulation (e.g. refugees, gender, or race/ethnicity subgroups, active duty military, veteran); and type of traumatic event exposure (e.g. interpersonal violence). The following variables were extracted to summarize prevalence measures: estimates and corresponding look-back periods (e.g. point, 1-year, or lifetime prevalence), and metric (e.g. Posttraumatic Stress Disorder Checklist [PCL]).

The data extraction was conducted independently by two investigators using a standardized extraction grid. Disagreements were reconciled through discussions with a third investigator.

Data synthesis

Prevalence data were categorized by study populations (e.g. civilian and military populations), metric (e.g. PCL;

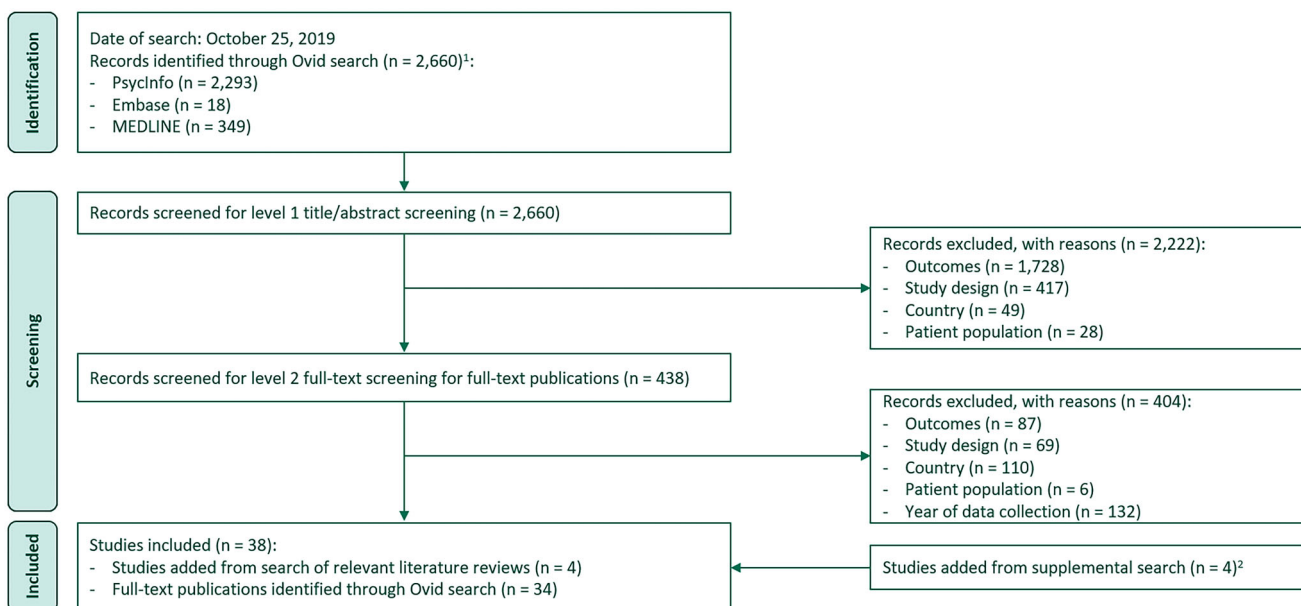


Figure 1. PRISMA diagram of study identification and selection. Abbreviations. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses. Notes. ¹Ovid search was conducted by database. ²The supplemental search evaluated the review articles included in the targeted literature review process. These articles were screened according to the inclusion/exclusion criteria.

International Classification of Diseases, Ninth Revision; unstructured data), and prevalence look-back period. To provide a more representative and generalizable summary of the data, studies with particularly high quality prevalence estimates were identified. Prevalence data were considered high quality based on the following information: (1) generalizability to the study's targeted population or subpopulation (e.g. sample size of at least several hundred individuals [probability sampling was considered higher quality than convenience sampling]); (2) quality of the measurement or assessment of PTSD (e.g. face-to-face clinical interviews were deemed of higher quality than self-reported surveys); and (3) overall quality of the study design or methodology (e.g. the look-back period was required to be clearly defined and consistent across the study sample^{28,29}).

Results

Study selection

A total of 2660 records were identified from the structured database search (Figure 1). Of these, 438 passed the initial title/abstract screening, and 38 studies passed full-text screening and were selected for data extraction. Characteristics of included studies are described in Table 1.

Prevalence

Prevalence in civilian populations

In civilian populations, point estimates of prevalence ranged from 8.0%⁴⁷ to 56.7%⁶¹, the 1-year prevalence from 2.3% to 9.1%³⁰, and the lifetime prevalence from 3.4%⁴⁸ to 26.9%⁴⁰ (Table 1). Prevalence estimates varied widely across subpopulations, with the highest reported for patients with a history of suicide attempt (point estimate: 56.7%)⁶¹ and the lowest reported for older adults without financial mistreatment (i.e. illegally or improperly using an older adult's money, property, and/or assets; 1-year prevalence: 2.3%)³⁰. Prevalence was particularly high among certain additional subpopulations, such as refugees⁴⁵, American Indian/Alaska Natives⁴⁰, individuals with heavy alcohol and marijuana use^{47,57}, and trans-masculine individuals⁵³. See Table 1 for the full set of prevalence estimates, categorized by study population and look-back period.

For the overall civilian population, the highest quality studies identified used data from the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III), which measured PTSD in large, nationally representative samples using the Alcohol Use Disorder and Associated Disabilities Interview Schedule, DSM-5 Version (AUDADIS-5), a validated, structured clinical interview assessment⁶⁷. Three studies provided PTSD prevalence estimates for the overall civilian population: one estimated the 1-year prevalence at 4.7% (men: 2.6%, women: 6.0%)⁴⁸, another estimated the lifetime prevalence at 6.1% (men: 4.1%, women: 8.0%)²², and the third study arrived at the same 6.1% overall civilian lifetime prevalence (Figure 2)⁶⁰. A fourth study using NESARC-III evaluated subgroups of American Indian/Alaska Natives and

non-Hispanic White individuals, finding a lifetime PTSD prevalence of 22.9% (men: 17.1%, women: 26.9%) and 11.7% (men: 7.7%, women: 14.9%) in these groups, respectively⁴⁰.

Prevalence in military populations

In military populations, point prevalence estimates ranged from 1.2%⁵² to 87.5%⁴¹ (with most estimates clustered in the 5% to 15% range), 1-year prevalence from 6.7%⁴⁸ to 50.2%⁵⁵, and lifetime prevalence from 7.7%^{40,48} to 17.0% (Table 1)⁵². Most studies included veterans rather than active duty service members (ADSM), although several focused on ADSM and two presented estimates for veterans and ADSM together. The highest prevalence estimates were observed among a combined sample of veterans and ADSM with tobacco use or dependence (point estimate range: 69.8% to 87.5%)⁴¹. Similar to the studies of civilian populations, the highest quality prevalence data for military populations came from a study that assessed NESARC-III data, which can be analyzed separately for civilian and veteran populations⁴⁸. In this study, the 1-year prevalence of PTSD was estimated at 6.7% among male veterans and 11.7% among female veterans, and the lifetime prevalence was estimated at 7.7% and 13.4%, respectively (Figure 3).

In addition to civilian and military populations, several studies assessed the prevalence among emergency responders, including those exposed to the 11 September 2001 (9/11) terrorist attacks on the World Trade Center and those in the Coast Guard (Table 1). Among 9/11 emergency responders, the point prevalence of PTSD ranged from 9.2%³⁵ to 12.4%³⁷, the 1-year estimate of prevalence ranged from 19.9% to 25.9%⁵⁶, and the lifetime prevalence was estimated to be 23.1%³⁷. Among Coast Guard emergency responders, the point prevalence of PTSD was estimated to be 15.0%⁵⁸.

Discussion

This SLR synthesized the most recent published estimates of the prevalence of PTSD in the US. The clearest trends that emerged were related to differences by sex and veteran status. In the highest quality studies of civilian populations, the 1-year prevalence of PTSD was estimated to be approximately twice as high among women compared to men, and 6.1% overall^{22,48}. Moreover, both the 1-year and lifetime PTSD prevalence estimates were approximately twice as high among veterans than among civilians⁴⁸. Thus, both the 1-year and lifetime PTSD prevalence estimates were higher among veterans than among civilians, and higher among women than among men.

Across and within populations, estimates often varied substantially. The wide range of prevalence estimates reported in the present SLR reflects the multiple challenges inherent in the assessment of PTSD prevalence, including the underdiagnosed nature of this psychiatric disorder, the heterogeneity of the populations and look-back periods evaluated (i.e. point, period, or lifetime prevalence), and the potential for misdiagnosis.



Table 1. Selected characteristics and findings of the 38 studies included in the SLR.

Authors and publication year	Data source	Data year(s)	Sample size	Study population	Prevalence	
					Look-back period	Estimate(s)
30	National Elder Mistreatment Study	2008, 2016	774	Civilian older adults with and without financial mistreatment	1-year	Without financial mistreatment: 2.3% With financial mistreatment: 9.1%
31 †	World Trade Center Health Registry	2015–2016	1304	Civilian 9/11 survivors	Point	13.0%
32	Participating surgeons' clinics at the Cleveland Clinic Comprehensive Hernia Center (Cleveland, Ohio)	2018	131	Civilian patients with incisional hernia	Point	32.1%
33	Convenience sample	2014	17	Civilian individuals with deafness	Point	50.0%
34	Research clinic	2008–2013	157	Civilian women experiencing intimate partner violence	Point	26.8%
35	Stony Brook University World Trade Center Health Program	2012–2013	870	Emergency responders, 9/11, exposed to Hurricane Sandy	Point	Pre-Sandy, lifetime: 9.2% Post-Sandy, point: 9.5%
36	Academic military sleep disorders center	2014–2015	101	Military active duty women with sleeping disorders	Not reported	21.8%
37 †	Stony Brook University World Trade Center Health Program	2015–2016	1271	Emergency responders, 9/11	Point and lifetime	Point: 12.4% Lifetime: 23.1%
38	Voluntary and self-selected readers of an emergency medicine publication, Emergency Medicine News	2015–2016	526	Civilian emergency physicians	Point	15.8%
39	Massachusetts General Hospital	2012–2014	67	Civilian hematopoietic stem cell transplant (HSCT) recipients	Point	28.4%
40 ‡	National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III)	2012–2013	19,705	Civilian American Indians and Alaska Native (AIAN) and non-Hispanic White (NHW), overall and by sex ^a	Lifetime	AIAN: Overall 22.9%, men 17.1%, women 26.9% NHW: Overall 11.7%, men 7.7%, women 14.9%
41	Translational Research Center for Traumatic Brain Injury and Stress Disorders (TRACTS) longitudinal cohort of post 9/11 veterans	2009–2016	343	Military veterans and active duty, by tobacco use/dependence (no use, any use, low dependence, moderate/high dependence)	Point	No use: 54.9% Any use: 73.9% Low dependence: 69.8% Moderate/high dependence: 87.5%
42	World Trade Center Health Registry	2015–2016	3199	Civilian 9/11 survivors who experienced Hurricane Sandy	Point	Sandy-related: 7.4% 1-year: 4.7% Lifetime: 6.1%
22 ‡	National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III)	2012–2013	36,309	Civilian overall	1-year and lifetime	1-year: 4.7% Lifetime: 6.1%
43	Bellevue Hospital Jail Psychiatry Service (BHJPS)	2011–2013	48	Civilian incarcerated men admitted for inpatient psychiatric treatment	Point	46.2%
44	Midwestern VA Medical Center	2006–2013	2463	Military veterans	Point	58.1%
45	Two primary care clinics in Detroit screening resettling Syrian refugees	2016–2017	157	Civilian refugees	Point	32.2%
46	Speak to Your Health Community Survey	2015–2016	786	Civilian residents of Genesee County, Michigan	Point	20.0%
47 †	Harlem Longitudinal Development Study	1990–2013	674	Civilian African American and Puerto Rican, overall and among those with alcohol, tobacco, and marijuana use	Point	Overall: 8.0% Moderate alcohol use: 4.0% Tobacco and alcohol use: 7.0% Alcohol and marijuana use: 9.0%
48 ‡	National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III)	2012–2013	36,101	Civilian and veteran, by gender	1-year and lifetime	Increasing use of alcohol, tobacco, and marijuana: 10% Heavy use of alcohol, tobacco, and marijuana: 21% Civilian women: 1-year: 6.0%, lifetime: 8.0% Civilian men: 1-year: 2.6%, lifetime: 3.4% Veteran women: 1-year: 11.7%, lifetime: 13.4% Veteran men: 1-year: 6.7%, lifetime: 7.7%
49 †,‡	National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III)	2012–2013	23,126	Civilian and veteran women, veteran men	1-year	Civilian women: 6.0% Veteran women: 11.4% Veteran men: 5.2%

(continued)

Table 1. Continued.

Authors and publication year	Data source	Data year(s)	Sample size	Study population	Look-back period	Prevalence Estimate(s)
50	National Health and Resilience in Veterans Study (NHRVS)	2011–2015	2117	Military veterans aged 55 years and older	N/A ^c	N/A
51	Fred Hutchinson Cancer Research Center (FHRC) HCT survivorship survey	2016–2017	1024	Civilian hematopoietic stem cell transplant (HSCT) recipients and caregivers	Point	Patients: 3.3% Caregivers: 6.6%
52 †	National Vietnam Veterans Longitudinal Study	2012–2013	400	Military veterans, by sex, combat experience (Vietnam era and Vietnam theater), diagnostic criterion, and PTSD source (war zone, non-war zone, any)	Point and lifetime	Point: Vietnam era (not war) (PCL-5+), any: 1.4% Vietnam (theater) (PCL-5+), war zone: 11.2% Vietnam (theater) (PCL-5+), non-war zone: 4.6% Vietnam (theater) (PCL-5+), any: 12.2% Male Vietnam era (not war) (PCL-5+), any: 1.2% Male Vietnam (theater) (PCL-5+), war zone: 11.2% Male Vietnam (theater) (PCL-5+), non-war zone: 4.6% Male Vietnam (theater) (PCL-5+), any: 12.2% Male Vietnam (theater) (CAPS-5), war zone: 4.5% Female Vietnam era (not war) (PCL-5+), any: 3.9% Female Vietnam (theater) (PCL-5+), war zone: 6.6% Female Vietnam (theater) (PCL-5+), non-war zone: 5.1% Female Vietnam (theater) (PCL-5+), any: 8.5% Female Vietnam (theater) (CAPS-5), war zone: 6.1% Lifetime: Male Vietnam (theater) (CAPS-5), war zone: 17.0% Female Vietnam (theater) (CAPS-5), war zone: 15.2% 42.2%
53	Boston-based biobehavioral sexual health study	2015–2016	150	Civilian trans-masculine individuals	Point	Age 18–32: 15.0% Age 18–24: 8.0% Age 25–34: 17.0% Overall: 16.2% MST: 50.2% No MST: 15.2% Men: 19.9% Women: 25.9% 34.0% (both groups)
54	National Violent Death Reporting System (NVDRS)	2005–2014	1362	Military veteran male suicide decedents, by age	Lifetime	1-year
55	Surgical Treatment Outcomes for Patients with Psychiatric Disorders (STOPP); VA Corporate Data Warehouse	2013–2014	213,985	Military veteran women, overall and stratified by military sexual trauma (MST) exposure	Point	1-year
56	World Trade Center (WTC)-Heart program	2012–2013	5971	Emergency responders, 9/11, by gender	Point	1-year
57	Prospective observational trial, TREAT 001 (NCT02172898)	2014–2017	179	Civilian heavy alcohol drinkers, with alcoholic hepatitis and without liver disease	Point	
58	Cognitive Assessment in Coast Guard Personnel: Neuroendocrine, Genetic and Epigenetic Correlates study	2013–2015	241	Emergency responders, Coast Guard	Point	15.0%
59 †	VA Mid-Atlantic Mental Illness Research, Education, and Clinic Center (MIRECC) Post-Deployment Mental Health (PDMH) study	2005–2015	3191	Military veterans and active duty	Point	31.0%
60 ‡	National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III)	2012–2013	36,309	Civilian	Lifetime	6.1%
61	N/A (sample recruited via web-based survey platform)	2018	412	Civilian individuals with history of suicide attempt	Point	56.7%
62 †	Pre/Post Deployment Study (PPDS), a component of the Army Study to Assess Risk and Resilience in Service members (Army STARRS)	2012–2013	7742	Military active duty, pre and post deployment	Point and lifetime	Lifetime, pre-deployment: 12.0% Point, 3 months post-deployment: 7.8% Point, 9 months post-deployment: 11.7%

(continued)

Table 1. Continued.

Authors and publication year	Data source	Data year(s)	Sample size	Study population	Look-back period	Prevalence Estimate(s)
63 †	National Health and Resilience in Veterans Study (NHRVS)	2013	1484	Military veterans	Point and lifetime	Point: 5.2% Lifetime: 12.0%
64	National Health and Resilience in Veterans Study (NHRVS)	2011, 2013	1202	Military veterans, by gender and use of VA as main source of health care	Lifetime	Women using VA: 35.6% Women not using VA: 19.2% Men using VA: 20.9% 7.7%
65	Operation: Soldiers and Families Excelling Through the Years (SAFETY)	2014–2015	248	Military active duty	Point	1.8%
66	Career History Archival Medical and Personnel System (CHAMPS) and the Military Health System Data Repository (MDR)	2006–2013	523,626	Military active duty	Eight-year	

Abbreviations. N/A, not applicable; HCT, hematopoietic cell transplantation; PCL, Posttraumatic Stress Disorder Checklist; PTSD, post-traumatic stress disorder; SLR, systematic literature review; VA, Veterans Affairs; WTC, World Trade Center. †High quality prevalence data; ‡Highest quality prevalence data.

Notes. †Emerson et al.⁴⁰ selected their study sample from the overall pool NESARC-III survey respondents, which is comprised of civilians, some of whom have veteran status. As veteran status was not reported in the results, we have included the estimates from this study in the civilian population category rather than military. ‡The two studies by Lehavot et al.⁴⁸ use the same data source; however, values from Lehavot et al.⁴⁹ were adjusted for age and race/ethnicity, while values from Lehavot et al.⁴⁸ were not. Only values from Lehavot et al.⁴⁹ are reported in this study's summary tables and figures. †Ley et al. (2019) reported risk factors for incident PTSD and did not include prevalence estimates.

PTSD is an underdiagnosed and sometimes misdiagnosed clinical entity, which complicates assessments of prevalence²⁴. Stigma and suboptimal healthcare access can complicate the diagnosis of PTSD. Patients with PTSD may not be fully aware of their symptoms, may not seek health support, or may be unwilling to disclose the full scope of their symptoms due to concerns of stigmatization^{3,15}, such that many cases can go undetected. Prior research has also shown that some patients who screened positive for PTSD, anxiety, or depression find it difficult to seek healthcare support due to various barriers (e.g. difficulty finding or paying for health care)^{23,68}. Furthermore, approximately half of patients with PTSD present with other mental or behavioral health comorbidities^{19–22,25}. Symptoms can overlap across behavioral conditions, creating potential for misdiagnosis of PTSD as another condition, or delayed diagnosis of PTSD²⁵. Conversely, symptoms may be misattributed to PTSD. For example, returning veterans are typically within the peak age group for onset of schizophrenia, a condition for which trauma exposure is also a risk factor; an individual experiencing symptoms of psychosis during the onset of schizophrenia may be misdiagnosed as having PTSD⁶⁹. This overlap in presentation may at least partly explain the wide ranges of PTSD observed across some populations.

Stigma, suboptimal healthcare access, and co-existing conditions can at least partially explain why PTSD can be underdiagnosed or misdiagnosed in routine clinical practice. The choice of data source for an epidemiological study is another potential source of underdiagnosis. Studies that assess the prevalence of PTSD only based on administrative records of diagnosed PTSD (e.g. insurance claims or electronic health records) may not capture all cases of PTSD, due to underdiagnosis as well as underreporting. The majority of studies retrieved in this SLR utilized patient-reported measures of PTSD such as structured clinical interviews and validated checklists, which in part mitigates the risk of underreporting.

Another factor that contributes to the difficulty in assessing PTSD prevalence is the variable clinical course of PTSD (i.e. immediate vs. delayed onset, chronic vs. non-chronic), which may be influenced by the nature of the traumatic event experienced. For instance, exposure to intentional (e.g. assault, war) versus non-intentional (e.g. natural disaster, car accident) traumatic events may influence whether PTSD will follow a chronic or remitting clinical course. Following non-intentional traumatic events, the rate of PTSD has been found to decline between 1 and 12 months post-event, whereas the opposite has been found following intentional traumatic events¹⁷. In addition, military combat exposure has been found to be associated with so-called “delayed expression” of PTSD¹⁸, a term which refers to the onset of PTSD months or even years after traumatic event exposure^{16,18}. Therefore, studies may report discrepant prevalence rates of PTSD simply due to differences in the nature of the traumatic events to which the studied populations were exposed. Studies identified in this SLR focused on populations exposed to a variety of traumatic events, which likely explains part of the variation in prevalence rates.

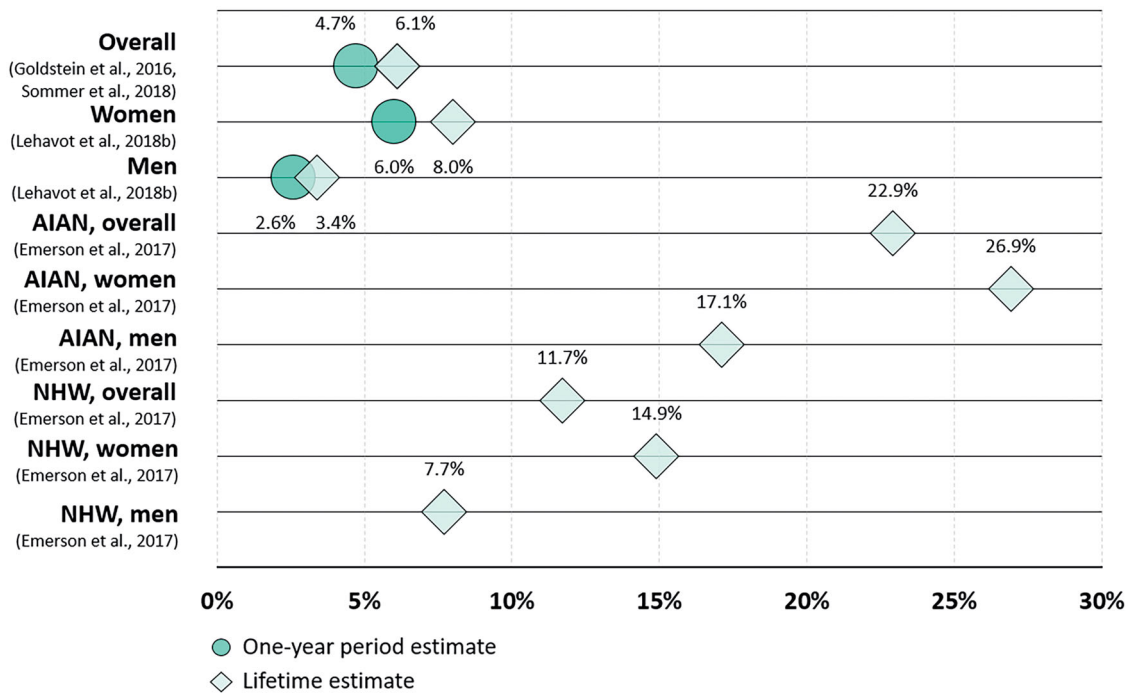


Figure 2. Prevalence of PTSD, civilian populations, highest quality data. Prevalence levels (x-axis) by population groups (y-axis). Types of prevalence estimates: 1-year (circle) and lifetime (rhombus). Abbreviations: AIAN, American Indian/Alaska Native; NHW, non-Hispanic white; PTSD, post-traumatic stress disorder.

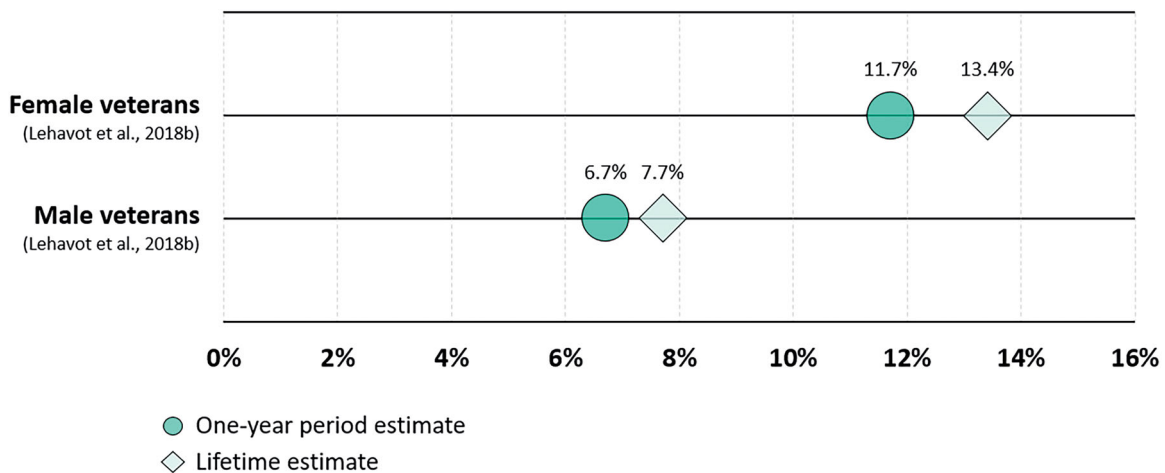


Figure 3. Prevalence of PTSD, military populations, highest quality data. Prevalence levels (x-axis) by population groups (y-axis). Types of prevalence estimates: 1-year (circle) and lifetime (rhombus). Abbreviations: PTSD, post-traumatic stress disorder.

The challenge of assessing the prevalence of PTSD is further compounded by heterogeneity in study populations due to the presence of population-specific risk factors for PTSD. In this SLR, studies that assessed PTSD in a predominantly female population tended to report higher prevalence rates than those that focused on a predominantly male population, among both civilians and veterans; this finding is consistent with studies demonstrating that female sex is a risk factor for PTSD^{22,49,62,63}. The fact that women are more likely to be exposed to some traumatic events (e.g. sexual assault) may help explain this phenomenon³. Other documented risk factors that consistently increased the risk of PTSD across the studies identified in this SLR include having a low income (odds ratios [ORs] for low-income vs. not ranged across studies from 1.4 to 2.3), younger age (ORs for

age <65 vs. ≥65 years ranged from 1.4 to 4.0), and behavioral health conditions (ORs for substance use disorder vs. none ranged from 1.3 to 3.5; ORs for drug use disorder vs. none ranged from 1.5 to 3.9, OR for alcohol use disorder vs. none was estimated to be 1.2, and ORs for diagnosed mental illness vs. none ranged from 1.5 to 3.0)^{22,41,49,62,63}. Moreover, there may be interactions between risk factors or exposure types that confound the attribution of PTSD to any specific cause(s). For example, military veterans may experience non-combat-related traumatic events, such as trauma due to sexual assault; this may partly explain the higher prevalence of PTSD among women veterans than men veterans observed in several studies.

In addition to the aforementioned factors, methodological differences across studies impact PTSD prevalence estimates.

To the extent possible, these differences were accounted for in this study in order to accurately synthesize the prevalence data. For example, prevalence estimates were categorized according to look-back period (i.e. point, period, and lifetime prevalence) in the evidence synthesis, as look-back period can impact prevalence. Studies that assessed prevalence over shorter look-back periods are more likely to miss cases of “delayed expression” PTSD¹⁶ as the disorder’s onset is more likely to occur after the period under assessment for these cases; this suggests that prevalence rates will be higher over longer look-back periods. This trend was borne out in all populations assessed using the highest quality data from NESARC-III. However, there was sometimes substantial variation in prevalence across estimates with comparable look-back periods, namely among military populations. This variation may have been due to heterogeneity in study design (e.g. representative versus convenience sampling), in addition to nuances in study population and risk factors as previously discussed.

The present SLR provides a systematic categorization of existing PTSD prevalence estimates for the US population and a number of specific subpopulations, and sheds light on a substantial gap in our understanding of the epidemiology of PTSD in the US. Few studies have documented the prevalence of PTSD in an inclusive and representative sample of the US population. Moreover, underdiagnosis and underreporting of PTSD, heterogeneity across studied populations with regards to traumatic event exposure and risk factors, and methodological differences influence the prevalence of PTSD through a complex interplay that makes it challenging to synthesize epidemiological data.

This knowledge gap limits our ability to assess the true societal burden of PTSD and may also hinder initiatives to adequately screen and treat PTSD. Additionally, there is evidence that PTSD may be suboptimally managed. In a study using NESARC-III data, individuals with PTSD were found to have received their first PTSD treatment (including both pharmaceutical and non-pharmaceutical therapies) approximately 4.5 years following disorder onset²², suggesting that delayed treatment is a substantial problem. An improved understanding the prevalence of PTSD is essential to raising awareness of the disorder among the general US population as well as among healthcare providers, and may help alleviate the burden of PTSD by leading to more timely treatment.

Increased awareness of PTSD and the occurrence of new widespread traumatic events may impact the prevalence of PTSD in the US population. For example, the #MeToo movement has brought more attention to the prevalence of sexual assault, which may increase public awareness of PTSD and alleviate the stigma surrounding it. The BlackLivesMatter movement has also raised awareness about the connection between structural racism and trauma^{70,71}. Similarly, mass shootings in the US have sparked discussions regarding gun violence as a source of trauma⁷². Most prescient is the COVID-19 pandemic, which has created stressors that may translate into higher rates of PTSD in the US, as well as globally^{73–76}. Healthcare workers treating the influx of patients infected with COVID-19 and working under high-stress conditions may be at particular risk⁷⁷, and persistent symptoms after the resolution of infection

(i.e. long COVID symptoms) may contribute to patients’ stress in the longer term^{78,79}. Additionally, the prolonged periods of stress, isolation, or close quarters brought about by the COVID-19 pandemic may increase the occurrence of traumatic events, including domestic violence, child abuse, and substance abuse⁸⁰. As new potential sources of trauma may emerge, stigma may lessen and individuals may become increasingly aware of PTSD symptoms over time. Thus, it is important to periodically reassess the prevalence of PTSD.

In addition to the intrinsic limitations of measuring PTSD prevalence noted above, the results should be interpreted in light of the following limitations more specific to this study. First, despite the comprehensive scope of the present SLR, the included studies were heterogeneous in terms of study design, population, and methodology, resulting in a wide range of prevalence estimates. Accordingly, the calculation of a single prevalence estimate representative of the general US population using meta-analytical techniques was not suitable. Second, despite an effort to capture recently collected data regarding PTSD prevalence, the highest quality estimates identified through this review are based on data collected some years ago. Thus, the data summarized in the current study do not capture the most recent trends that may impact the prevalence of PTSD, such as the COVID-19 pandemic.

Conclusions

This study comprehensively reviewed recent prevalence estimates of PTSD in the US. Based on the highest quality estimates identified, the 1-year prevalence of PTSD ranged from 2.6% to 6.0% among civilians and from 6.7% to 11.7% among veterans^{22,48}, while the lifetime prevalence ranged from 3.4% to 8.0% among civilians and from 7.7% to 13.4% among veterans^{22,63}. Prevalence estimates varied widely across studies, partly due to differences in study design and population and the lack of consistency in screening tools and methodology used to estimate prevalence. This leads to estimates with wide ranges and complicates comparisons of prevalence across subpopulations, creating barriers for a reliable, quantitative understanding of PTSD prevalence. With this caveat, the data suggest an elevated prevalence of PTSD in certain subpopulations, including women, emergency responders, and American Indian/Alaska Native men and women. Efforts to increase and improve PTSD screening, as well as enhance disease awareness among stakeholders—physicians, policy makers, governments, and patients themselves—may allow for a better detection and management of PTSD, both in the overall US population and among high-risk subpopulations.

Transparency

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Author contributions

All authors were involved in the conception and design of the study, the interpretation of the data, the draft and approval of the manuscript. All authors agree to be accountable all aspects of the work.

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Data availability statement

As this was a SLR or previously published data, there are no new datasets associated with this study

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